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A REVISION OF THE SOUTH AFRICAN SPECIES
OF ORNITHOGALUM L.

By FRANCES M. LEIGHTON.

PART III.

(Concluding, with complete key to the Species.)

(Part I was published in this Journal, Vol. X, pp. 83—110; Part II in Vol. X, pp. 111—122.)

33. *O. inclusum* Leighton in S.A. Gardening, XXIV, 50.

Plants 20—30 cm. high. *Bulb* depresso-globose, whitish, 2—3 cm. diam. *Leaves* 3—4, vaginate, superposed, pale glaucous green, lowest leaf obtuse 3—5 cm. long, 1—2 cm. broad, upper leaves acute 7—9 cm. long, 10—25 mm. broad. *Inflorescence* many flowered, dense, pedicels up to 5 mm. long, bracts membranous, longer than the pedicels. *Perianth-segments* spreading, white with green median stripe, obtuse, 10—11 mm. long, 4—5 mm. broad. *Stamens* erect, filaments enclosing the ovary and style, three outer filaments 6 mm. long, 2 mm. wide, broadly expanded, three inner 9 mm. long, constricted in the middle, upper half up to 3 mm. broad with crenulate margin, lower half up to 2·5 mm. broad. *Ovary* ovoid, 5 mm. long, style and stigma 3 mm.

Hab. Cape Province. Clanwilliam Div.: Doornbosch, *Leighton* in Bolus Herb. 20808 (*Type*), *Barker* 1924, *Esterhuysen* 7635.

Fl. Aug.—Sept.

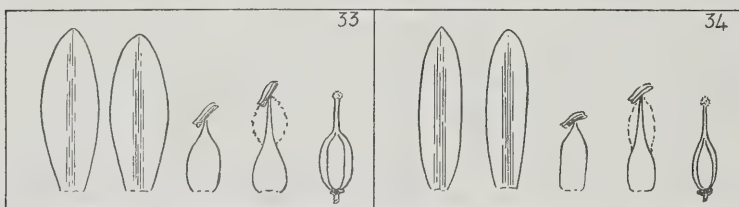
[Fig. 33, Map VI.]

The figures show in each case an analysis of the floral parts in the following order: Outer and inner perianth segments, outer and inner stamens, gynaeceum.

34. *O. constrictum* Leighton sp. nov.

Planta alt. ad 40 cm. *Bulbus* globosus vel depresso-globosus. *Folia* 2—3, lanceolata vel ovato-lanceolata, glabra, marginibus crassis, dense ciliatis. *Inflorescentia* stricta; pedicelli adscendentes vel erecti, bracteis breviores. *Perianthii segmenta*, alba, viridi-vittata, angusta, acuta vel sub-acuta. *Stamina* erecta, apicibus a stigmate divergentibus, inaequilonga, tria exteriora quam gynaecio breviora, filamentis oblongis, tria interiora stylo cum stigmate equilonga, filamentis expansis medio constrictis, dimidio inferiore expanso, margine integro, dimidio superiore etiam latiore, margine crenulato vel fimbriato. *Ovarium* longum in stylo diminuendum, stigmate capitato. *Semina* atra, angulata.

Hab. Cape Province. Riversdale Div.: On road to the Fisheries W. bank of Gouritz River, *James* 1445 (*Type* in Bolus Herb.); Hills near Riversdale, *Muir* in Bolus Herb. 23065. Oudtshoorn Div.: near Cango Caves, *Bolus* 12412; Oudtshoorn Commonage (Uitenhage beds),



33. *O. inclusum*. 34. *O. constrictum*. (All figures $\times 2$.)

Marloth 12177. Humansdorp Div.: N. side of Kromme River near Assegai Bosch, *Fourcade* 2439. Uitenhage Div.: Redhouse, *Paterson* 438; Zwartkops River, *L. Bolus* in Nat. Bot. Gdns. 863/31. Somerset East Div.: Bruintjieshoogte, *MacOwan* 1855. Albany Div.: near Alicedale, *Dyer* 3332. Victoria East Div.: Naude's Hoek near Alice, *Giffen* 779.

Plants up to 40 cm. high. *Bulb* globose or depresso-globose, 12—20 mm. diam. *Leaves* 2—3, lanceolate or ovato-lanceolate, 5—8 cm. long, 10—25 mm. broad, surfaces smooth, margins thickened and densely but shortly ciliate. *Inflorescence* long, narrow; pedicels 10—15 mm. long; bracts longer than the pedicels. *Perianth-segments* white with a green median stripe on the under side, narrow, acute or subacute, 12—15 mm. long, 3—5 mm. wide. *Stamens* erect enclosing the ovary but diverging at their apices, three outer filaments oblong, shorter than the gynaecium, three inner as long as the gynaecium, filaments expanded from apex to base constricted at the middle; the expansion of the upper half ovate with crenulate or slightly fimbriate margins, the lower

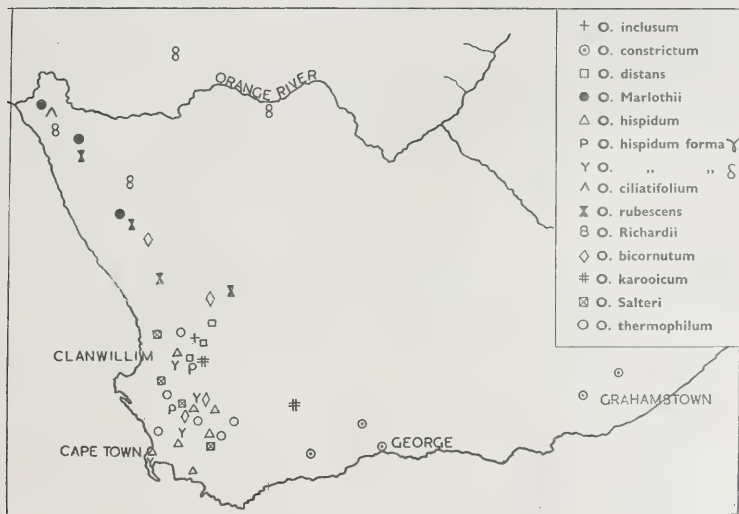
half a little narrower than the upper, margins entire. *Ovary* long, fusiform tapering into the style at the apex. *Stigma* conspicuously capitate.

Fl. Dec.—Jan.

[Fig. 34. Map VI.]

35. *O. distans* L. Bolus in Journ. Bot. LXXI, p. 71.

Plants 25—30 cm. high. *Leaves* 3, widely spaced, vaginate for 1—5 cm. rarely as much as 10 cm., vagina setose, green spotted in the lower leaves, green nerved in the upper; laminae 4—7 cm. long, 8—10



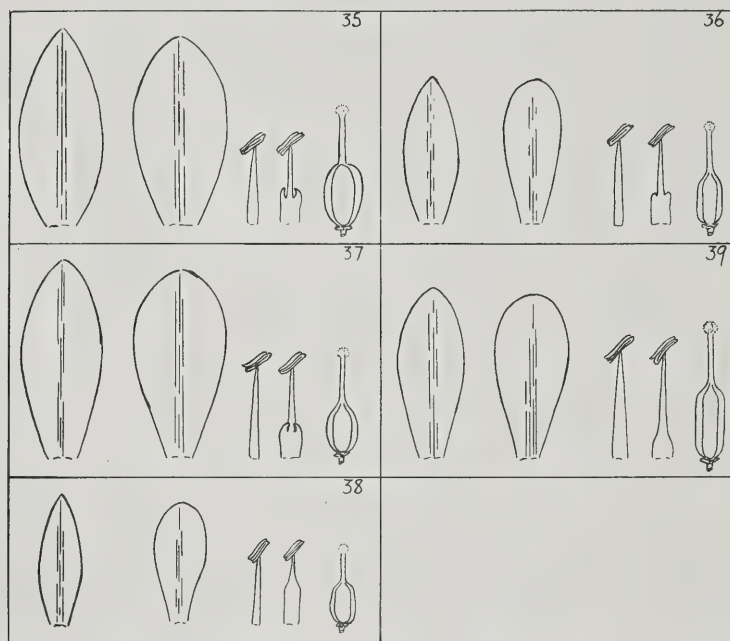
MAP VI.

mm. broad, varying in shape, lowest oblong or oval, obtuse up to 2 cm. long, and 11 mm. broad, upper leaves linear, attenuate, acute or subacute, pilose on both sides, hairs spreading. *Inflorescence* few—many-flowered, pedicels 15—30 mm. long, bracts long-attenuate from a broad base, green when young becoming membranous with age. *Perianth-segments* up to 16 mm. long, 6—7 mm. broad, white with a median green stripe on the under surface, oblong-ovate or sub-obovate, obtuse, three inner segments often pure white and slightly clawed at the base. *Filaments* white, 5—7 mm. long, 3 inner expanded in the lower half, expansions bilobed at the apex. *Style* and stigma 4 mm. long. *Ovary* yellow, 4 mm. long.

Hab. Cape Province. Calvinia Div.: Near Nieuwoudtville, *Buhr* in Bolus Herb. 19945 (*Type*), *Buhr* in Bolus Herb. 22754, *Buhr* in Nat. Bot. Gdns. 378/31; Calvinia, *Schmidt* 365. Clanwilliam Div.: Doornbosch, *Lewis* in Bolus Herb. 22752; Langkraal, *Barker* 291; Wupperthal, *Thode* A. 2095, and A. 2094.

Fl. Sept.—Oct.

[Fig. 35. Map. VI.]



35. *O. distans*. 36. *O. Marlothii*. 37. *O. hispidum*. 38. *O. ciliatifolium*.

39. *O. rubescens*. (All figures $\times 2$.)

36. ***O. Marlothii*** Leighton sp. nov. *O. conicum* Curt. Bot. Mag. 3538.

Plantae alt. ad 70 cm. saepe 20—50 cm. *Bulbus* globosus, diam. 10—15 mm. *Folia* 3—4, longe vaginata, distantia, pilosa vel glabra, marginibus ciliatis, infera laeva, saepe cordata, supera longiora. *Inflorescentia* elongata, 8—20 fl., floribus distantibus. *Bractae* e basi ovatae attenuatae, membranaceae. *Perianthii segmenta* nivea obtusa, tria exteriora saepe apicibus papillosis, long. 11—18 mm., lat. 4—6 mm.

Filamenta tria exteriora linearia, tria interiora basi abrupte expansa in squamam latam. *Ovarium* ovoideum, stylo gracile. *Semina* rugosa.

Hab. Cape Province. Little Namaqualand: Richtersveld, Marloth 12209 in Bolus Herb.; Spektakel, *Esterhuysen* 5741a; *Barker* 1927; Brakdam, *Barker* 1926; Between Garies and Khamieskroon, *L. Bolus* in Bolus Herb. 22759, *Leipoldt* 3356 (*Type*).

Plants tall and straggly, often as much as 70 cm. high, usually 20—50 cm. *Bulbs* relatively small, 10—15 mm. diam. *Leaves* 3—4, vaginate. The lowest leaf is very broad, sometimes broader than long, usually 35 mm. long, 32 mm. broad, the second leaf is often cordate and the uppermost lanceolate 3—7 cm. long, 15—30 mm. broad. The leaves vary in shape and size and the surface may be glabrous or pilose but the margins are constantly furnished with long, fine cilia. *Inflorescence* lax, few-flowered, elongating in fruit. *Flowers* white, tinged with bright green at the base; perianth-segments narrow, three outer 11—18 mm. long, 3—4 mm. broad, three inner 10—17 mm. long, 4—6 mm. broad. *Stamens* more than half as long as the perianth, three inner filaments abruptly expanded near the base. *Seeds* rugose.

Fl. Aug.—Sept.

[Fig. 36. Map VI.]

37. *O. hispidum* Hornem. Hort. Hafn. 331; Sprengel Syst. II, 33; Kunth Enum. IV, 350; *O. Bergii* Schlechtendal Linnaea I, 253; *O. trichophyllum* Bak. Engl. Bot. Jahrb. XV Beiblatt 35, 7; *O. miniatum* Schinz Bull. Herb. Boiss. II (1894) 223; *Anthericum pilosum* Jacq. Coll. Suppl. 87. Ic. (ii) 18, t. 416; Willd. Sp. Pl. (ii), 140; R. & S. Syst. VII, 480; *Phalangium pilosum* Poir. Encycl. II, 244.

Plants 10—25 cm., rarely as much as 45 cm. high. *Bulb* globose or depresso-globose 10—25 mm. diam., white, sometimes with grey, papery outer tunics, frequently producing a ring of 6—8 bulbils at the base. *Leaves* 2—4, usually 3, vaginate for 5—6 cm. from the base, vagina hispid, hairs usually clustered appearing compound; leaf surfaces hispid margins densely fringed with short cilia; lowest leaf-blade short, ovate or ovato-cordate 1—2 cm. long, 8—15 mm. broad, more densely and persistently hispid than the upper leaves; upper leaves lanceolate 5—8 cm. long, 10—12 mm. broad, apex often sub-acute; leaves quite shrivelled but often persisting at the flowering time. *Inflorescence* lax, 2—20 fld., bracts aristate from a broad clasping base, usually as long as the pedicels, pedicels 1—2 cm. long, ascending at flowering time, stiffly erect when in fruit. *Perianth* white on the upper surface, somewhat suffused with green or brown or with a median green or brown stripe on the under surface, segments spreading, often reflexing

a little when fully open, obtuse or acute 1—2 cm. long, 3—7 mm. broad. *Stamens* about half as long as the perianth segments, three outer with simple subulate filaments or only slightly expanded, three inner abruptly expanded in the lower half, with lobed apices to the expansions. *Ovary* ovoid, yellow or greenish yellow 3—4 mm. high, 2 mm. diam., style slender 3—4 mm. long, stigma conspicuous, papillose. *Seeds* black, echinate.

Hab. Cape Province. Cape Peninsula : Lion's Head, *Leighton* 43 ; Sea Point, *Schlechter* 133 ; Signal Hill, *Marloth* 9852 ; Table Mt., Groene Kloof, *Galpin* 4770 ; Blinkwater Ravine, *Marloth* 8202b ; Contour Path, *Penfold* in S.A. Mus. 52167 ; Platteklip, *Dummer* 770 ; Camps Bay, *Zeyher* 5048 ; Fish Hoek, *Marloth* 13304. Stellenbosch Div. : Stellenbosch, *Duthie* 260 ; Banhoek, *Martley* in Bolus Herb. 22766, 22792, *Compton* 10347 ; Helderberg, *Salter* 4222, *Galpin* 12387. Caledon Div. : Hermanus, *Compton* 14260, *L. Guthrie* in Bolus Herb. 17071, 17026, *Potts* in S.A. Mus. 5007 ; Vogelgat, *Schlechter* 9535 ; S. side of French Hoek Pass, *Esterhuysen* 5650. Worcester Div. : Villiersdorp, near bridge over River Zonder Einde, *Gillett* 714. Tulbagh Div. : Winterhoek, *Pappe* in S.A. Mus. 48448. Malmesbury Div. : Between Mamre and Darling, *L. Bolus* in Bolus Herb. 20431 ; near Kalabas Kraal, *Leighton* 190. Clanwilliam Div. : Heuning Vlei, *Esterhuysen* 7471 ; Matjesrivier, *Leipoldt* in Bolus Herb. 22711 ; Elands Kloof, *Esterhuysen* 3958 ; between Citrusdal and Keerom, *Pillans* 8668. Ceres Div. : Witzenberg, *Pillans* 9567.

Fl. Dec.—Feb.

[Fig. 37. Map VI.]

Forma β . Filaments of the outer whorl slightly broader than in the typical form.

Hab. Caledon Div. : Caledon, *Pappe* in S.A. Mus. 48,443 ; near the Baths, Caledon, *L. Bolus* in Bolus Herb. 19461, *Leighton* in Nat. Bot. Gdns. 688/33 ; Palmiet River Valley, *Stokoe* 1217, in Bolus Herb. 17517. Worcester Div. : Between Worcester and Botha's Halt, *L. Bolus* in Bolus Herb. 22712.

Forma γ . Outer filaments slightly expanded very near the base.

Hab. Ceres Div. : Mitchell's Pass, *Bolus* 5266, *Esterhuysen* 6197 ; near Ceres, *L. Guthrie* in Bolus Herb. 22793 ; between Gydo Pass and Elands Kloof, *Leighton* in Bolus Herb. 22769.

[Map VI.]

Forma δ . Lower leaves with clustered hairs which appear in the young leaf to be compound.

Hab. Cape Peninsula. Stinkwater Ravine, *Marloth* 8202 ; Contour Path, *Penfold* in S.A. Mus. 52166 ; above Camps Bay, *Marloth* 8202b ;

Wynberg Hill, *Penfold* 279; Edinburgh Estate, *Salter* 8580; near Kirstenbosch, *Bolus* 4515, *Esterhuysen* 116, 664, *Leighton* in *Bolus* Herb. 22720, 22721, *Compton* 14289; Orange Kloof, *Wolley Dod*, 3691; Oudeschip, *Middlemost* in Nat. Bot. Gdns. 2179/24; Karbonkelberg, *Leighton* 936; Constantiaberg, *Schlechter* in *Bolus* Herb. 7193; Klein Constantia, *Wolley Dod* 751; Muizenberg, *Bolus* 3306; Kogelfontein, *Salter* 8581; Arendskop, *Compton* 10313; Red Hill, *Salter* 8306, *Lewis* in S.A. Mus. 54920; Rooihoogte, *Leighton* 26, 375, *Compton* 15500. Stellenbosch Div.: Jonkershoek, *Esterhuysen* 9707, *Compton* 8349. Paarl Div.: Du Toits Kloof, *Esterhuysen* 9693; Berg River Hoek, *Compton* 8349. Tulbagh Div.: Tulbagh Waterfall, *Leighton* in *Bolus* Herb. 22768, *Bolus* 5265; Tulbagh Kloof, *Zeyher* 1682. Clanwilliam Div.: Middelberg, *Esterhuysen* 7387.

[Map VI.]

O. hispidum is a very variable species and owing to the fact that it flowers during the summer, when collectors are less frequently in the field, it has not been very carefully collected. The leaves if present are very dry and brittle when the flowers appear and are usually lost.

The occasional occurrence of compound hairs on the vaginate leaf bases of plants which have simple hairs on the leaves makes it very difficult to separate the typical form and *Forma* δ . Thus it seems advisable at present to retain these ill-assorted plants under one species until characters can be investigated which will enable them to be subdivided into species or varieties.

38. *O. ciliatifolium* Leighton sp. nov.

Plantae alt. ad 20 cm. *Bulbus* oblongo-globosus. *Folia* 2—3, lanceolato-ovata, acuta, sparse pilosa, pilis longis, marginibus ciliatis, basi vaginata. *Inflorescentia* multiflora, densa; bractae membranaceae, acuminatae; pedicelli adscendentes. *Perianthii segmenta* alba, tria exteriora angusta, acuta, tria interiora obtusa. *Stamina* tria exteriora vix ampliata, tria interiora basi abrupte expansa. *Ovarium* ovoideum. *Semina* atra, minute spinosa.

Hab. Cape Province. Little Namaqualand: Richtersveld, Doodkloof, *L. E. Taylor* in *Bolus* Herb. 22760 (*Type*).

Plants up to 20 cm. high. *Bulb* oblong-globose about 1 cm. diam. *Leaves* 2, rarely 3, up to 13 cm. long and 4 cm. wide, pilose with long sparse hairs, margins finely ciliate. *Inflorescence* many-flowered, flowers densely packed, flowering portion usually more than half the total length; bracts membranous longer than the pedicels; pedicels 5—7 mm. long. *Perianth* white, faintly striped with green on the under surface, segments 9—10 mm. long, 3—3.5 mm. broad. *Stamens* a little more

than half as long as the perianth, outer filaments linear, inner abruptly expanded in the lower half. *Ovary* ovoid, 3 mm. long, style and stigma together 2.5 mm. long. *Seeds* black with minute spiny projections.

Fl. Oct.

[Fig. 38. Map VI.]

39. *O. rubescens* Leighton sp. nov.

Plantae alt. ad 50 cm. saepe 20—30 cm. *Bulbus* globosus vel depresso-globosus, albus. *Folia* 3—5, distantia, rubro-marcescentia, vaginis per 3—10 cm. exsertis, interdum setosis, setis aggregatis brevibus, lamina infima parva, inferne rubra, supera lata ovata, acuta, superiora lanceolata, mucronata, pilosa vel glabra. *Inflorescentia* laxa parvi- vel multiflora, pedunculo basi rubroviride, bracteis membranaceis. *Perianthii segmenta* ovata vel obovata, reflexa. *Filamenta* linearia, erecta, tria interiora latiora. *Ovarium* ovoideum basi viride superne flavum. *Stigma* papillosa, flava. *Semina* nigra, granulata.

Hab. Cape Province. Calvinia Div.: Brandkop, *Stokoe* 8584 (*Type* in Bolus Herb.). Van Rhynsdorp Div.: Knechtsvlakte, *Leipoldt* 3883, *Esterhuysen* 5956; between Bitterfontein and Van Rhynsdorp, *Salter* 1600; Hills S.E. of Knechtsvlakte, *Pillans* 6341. Little Namaqualand, *Leipoldt* 3355; 3 m. S. of Steinkopf, *Taylor* 1197; Khamiesbergen nr. Leliefontein, *Esterhuysen* 2608; Bowesdorp, *Thorne* in S.A. Mus. 49984.

Plants up to 50 cm. high, more often 20—30 cm. *Bulb* white, globose or depresso-globose, 2—4 cm. diam. *Leaves* 3—5, changing with age from dull green to dark red, vaginate, superposed; vagina sometimes dotted with groups of short hairs; laminae varying in shape, lowest a short collar-like structure about 5 mm. long, second ovate or cordate, 2 cm. long, 15 mm. wide, upper lanceolate, often sparsely pilose, 3—10 cm. long, 10—15 mm. broad, margins reddish, ciliate. *Inflorescence* lax, few—many-flowered, peduncle reddish at the base only in the younger stages, but predominantly red with age; bracts membranous acuminate from a broad base; pedicels 1—2 cm. long. *Flowers* faintly scented. *Perianth-segments* creamy-white to greenish-yellow, undersurfaces greenish when young, deep red with age. *Filaments* erect linear, 5—8 mm. long, three inner broader than the three outer. *Ovary* ovoid 3—5 mm. high, 1.5—2 mm. diam.; style 2—4 mm. high, stigma conspicuous, papillose. *Seeds* shiny black, surface granular.

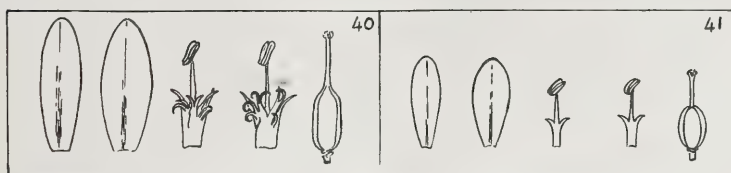
Fl. Aug.—Nov.

[Fig. 39. Map VI.]

The type was grown at the Bolus Herbarium and is larger than specimens in the wild state.

40. *O. Richardii* Leighton in S.A. Gard. XXIII 61 (1933).

Plants up to 20 cm., usually 10—15 cm., high. *Bulb* ovoid 10—15 mm. diam. produced into a short neck. *Leaves* 2—4, vaginate, superposed, up to 2 cm. long, 3—4 mm. broad, margins hyaline fringed with short hairs; on either side of the margin is a second fringe of longer, sparser cilia, only the remains of shrivelled leaves present at the flowering time. *Inflorescence* lax, usually 1—3 flowered, sometimes 6—8 flowers. *Peduncle* wiry; bracts membranous, short, broad, apex cuspidate; pedicels 10—15 mm. long. *Perianth* pinky cream faintly veined with green, only opening fully towards evening, segments oblong somewhat obtuse 10—12 mm. long, 3—4 mm. broad. *Stamens* erect, almost as long as the perianth segments, filaments widely expanded in the lower half, apices of these expansions divided into many curved, pointed outgrowths. *Ovary* ovoid 5 mm. long, style and stigma slender 4 mm.



40. *O. Richardii*. 41. *O. bicornutum*. (All figures $\times 2$.)

Hab. Cape Province. Gt. Bushmanland, Kakamas, *Fuller* 136 (*Type*), *Fuller* in Herb. Marloth 13722; between Upington and Kenhardt, *Lewis* in S.A. Mus. 53307; Vuurdood, *Schlechter* 11477. Little Namaqualand, Blaustaasie, *Pearson* in Sladen Mem. Exped. 5891; Steinkopf, *Meyer* in Herb. Marloth 6673 and 13365; South-West Africa, Klein Karas, *Dinter* 4987.

Fl. Sept.—Dec.

[Fig. 40. Map. VI.]

41. *O. bicornutum* Leighton sp. nov.

Planta alt. ad 12 cm. *Bulbus* ovoideus vel globosus in collum productus. *Folia* vaginata, marginibus ciliatis. *Inflorescentia* pauciflora. *Perianthii* segmenta albida, angusta. *Filamenta* basibus expansis bicornutis. *Ovarium* ovoideum.

Hab. Cape Province. Calvinia Div.: 51 miles on road from Brandvlei to Calvinia, *Esterhuysen* 4007 (*Type* in Bolus Herb. and Nat. Herb. Pretoria). Little Namaqualand, Low koppie opposite Bowesdorp, *Pearson* 5847 (Sladen Mem. Exped.).

Plants up to 12 cm. high. *Bulb* ovoid or globose 10—15 mm. diam., produced into a short neck. *Leaves* vaginate, margins almost smooth to densely ciliate. *Inflorescence* slender few-flowered, peduncle wiry, pedicels spreading, less than 1 cm. long, bracts short and broad. *Perianth* whitish, segments narrow somewhat obtuse, 6—7 mm. long, 1.5—2 mm. broad. *Stamens* almost as long as the perianth, filaments abruptly expanded near the base, apices of the expansions horned. *Ovary* ovoid, style slender, stigma conspicuous, papillose.

Fl. Oct.—Dec.

[Fig. 41. Map VI.]

This species is closely related to *O. Richardii*, differing only in the size of the flowers and the nature of the filaments.

42. *O. karooicum* Leighton in Journ. S.A. Bot. IX 110; *O. distans* L. Bolus in Fl. Pl. S.A. pl. 870.

Plants 10—26 cm. high, sometimes more. *Bulb* globose about 1 cm. diam. *Leaves* 3—4, hairy, margins densely fringed with short hairs, vaginate at the base; the vagina has dark green spots which turn red-brown on drying, and sparse, spreading hairs; lowest leaf ovate 1 cm. long, 6 mm. broad, upper leaves lanceolate, 3 cm. long, 1 cm. broad. *Inflorescence* 2—12-flowered, bracts membranous, attenuate, from a broad base, pedicels 10—15 mm. long. *Perianth-segments* 10—15 mm. long, 3—4 mm. broad, obtuse, white with a median green stripe on the under surface. *Filaments* subulate, rather more than half as long as the perianth-segments, three inner slightly broader at the base than the three outer. *Style* and stigma 3 mm. long. *Ovary* 3 mm. long. *Seeds* black, angled, rugose with obtuse papillae.

Hab. Cape Province. Laingsburg Div.: Cabidu Farm, *Compton* 12109 (*Type*); Karoo Garden, Whitehill, *Barker* in Bolus Herb. 22713, *Compton* 14656, *Archer* in Bolus Herb. 22718; Matjesfontein Karoo, *Compton* 3584, *Marloth* 10761; near Matjesfontein, *Bolus* 13450; *Snyders Kloof*, Matjesfontein, *Foley* 143; Matjesfontein, *Humbert* 26804, 26494. Clanwilliam Div.: *Krantzville*, *Gillett* 4033; *Wupperthal*, *MacOwan* 3235; *Clanwilliam*, *Leipoldt* 544.

Fl. Aug.—Oct.

[Fig. 42. Map VI.]

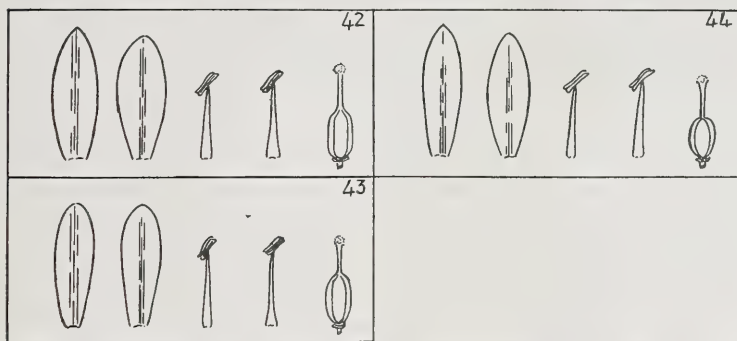
43. *O. Salteri* Leighton sp. nov.

Plantae alt. 6—26 cm. *Bulbus* globosus vel depresso-globosus, diam. 1—2 cm. *Folia* 3—5, vaginata, superposita, rubescentia, glabra vel sparse hispida vel velutina, marginibus minute fimbriatis vel integris; lamina infima cordata, supera lanceolata. *Inflorescentia* pauci- vel multiflora, pedicellis brevibus, adscendentibus vel erectis. *Perianthii*

segmenta angusta, obtusa vel subacuta, superne albida, inferne viridia vel rubescentia. *Filamenta* tria exteriora linearia, tria interiora basi vix expansa. *Ovarium* ovoideum, stylo cum stigmate longius.

Hab. Cape Province. Clanwilliam Div.: 4 m. E. of Graafwater, *Salter* 2792. Piquetberg Div.: $2\frac{1}{2}$ m. S.E. of Redelinghuys, *Pillans* 7720 (*Type* in Bolus Herb.); near Sauer, *Leighton* 159; near Het Kruis, *Barker* 2589. Tulbagh Div.: Quartz patch, Porterville Road, *Lewis* in Bolus Herb. 22089. Worcester Div.: Foot of hills near Worcester, *Esterhuysen* 10126.

Plants from 6—26 cm. high. *Bulb* globose or depresso-globose, whitish. *Leaves* 3—5, vaginate, superposed, reddish on the underface or with age, glabrous, rarely with minute clusters of hairs on the vagina of the lowest leaf, or finely and sparsely pilose on the upper leaves,



42. *O. karooicum*. 43. *O. Salteri*. 44. *O. thermophilum*. (All figures $\times 2$.)

or velvety, margins ciliate or quite smooth; lowest lamina cordate, up to 1 cm. in length and breadth, upper laminae lanceolate, 2—6 cm. long, 2—6 mm. broad, apex acute or sub-acute. *Inflorescence* slender, bracts often as long as, or longer than, the pedicels. *Perianth-segments* white, greenish or red on the under surface, narrow, obtuse or sub-acute. *Stamens* more than half as long as the perianth, 3 outer linear, 3 inner slightly expanded near the base.

Fl. Sept.—Oct.

[Fig. 43. Map VI.]

44. *O. thermophilum* Leighton sp. nov.

Plantae alt. ad 30 cm. *Bulbus* globosus vel depresso-globosus. *Folia* 2—4, vaginata, lanceolata, hispida, marginibus fimbriatis. *Inflorescentia* pauci- vel multiflora; pedicelli breves. *Perianthii* segmenta alba, obtusa

vel subacuta, inferne viride-vittata. *Stamina* subaequalia. *Ovarium* ovoideum. *Semina* atra, papillis brevibus obtusis.

Hab. Cape Province. Clanwilliam Div.: Nieuwoudt Pass, Cederberg Mts., *Esterhuysen* 7163 (*Type* in Bolus Herb.), *Compton* 12678; Grootkliphuis, *Leipoldt* 3354; Elandskloof, *Esterhuysen* 4141; Brakfontein, *Pappe* in S.A. Mus. 48435. Piquetberg Div.: Pickeniers Kloof, *Theiler* 52; Elandsvlei, *Barker* 290; De Hoek, *Leighton* 157, *Barker* 2935; Moutons Vlei, *Marloth* 11495; nr. Het Kruis, *Leighton* 191; Sauer, *Barker* 2663, *Leighton* 155; Bosch Kloof, *Barker* 2649; Piquetberg Mt., upper slopes, *Zinn* in S.A. Mus. 54624. Malmesbury Div.: nr. Darling on rocky outcrop, *Leighton* 158. Tulbagh Div.: Nieuwekloof, *Schlechter* 9041; Tulbagh, *Marloth* 9949; between Tulbagh and Wolseley, *Salter* 5104. Ceres Div.: Mitchell's Pass, *Esterhuysen* 5633, *Compton* 10111; Laken Vlei, *Phillips* 2087 (Nat. Herb. 11887); Ceres, *Way* in Bolus Herb. 22948. Worcester Div.: Hex River Valley, *MacOwan* 3350, *Tyson* 745; *Davidson* 22 (S.A. Mus. 143 and 3786.)

Plants 15–30 cm. high. *Bulb* 1–2 cm. diam. *Leaves* 2–4, vaginate, superposed, hispid, hairs may be simple or clustered to appear compound, sparse or forming a dense covering, margins densely fringed, lowest leaf broad, ovate or cordate, about 1 cm. long, upper leaves lanceolate 2–4 cm. long, 5–10 mm. broad. *Inflorescence* 2–20-flowered, bracts membranous, shorter than the pedicels, pedicels 8–12 mm. long. *Perianth-segments* obtuse or sub-acute, white with a median green stripe on the under surface, which fades to red brown, 3 outer segments 10 mm. long, 2.5 mm. broad, 3 inner 9 mm. long, 3 mm. broad. *Stamens* more than half as long as the perianth segments, filaments linear slightly broader at the base than at the apex, 3 inner filaments broader and longer than the 3 outer. *Ovary* ovoid, style and stigma together longer than the ovary, stigma conspicuously papillose. *Seeds* black with short blunt papillae.

Fl. Sept.—Dec.

[Fig. 44. Map VI.]

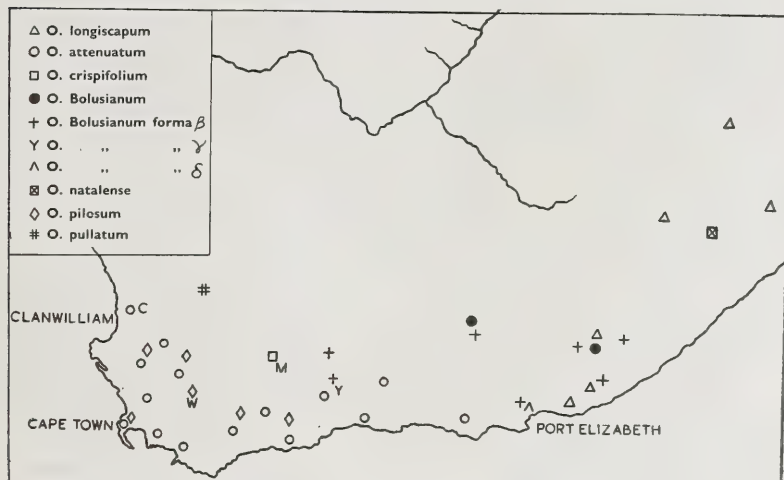
This species shows very similar variations to *O. hispidum* Hornem. in the character of the leaves. It has not been possible to sort out the variants into forms or varieties since they flower in mid-summer when the leaves are shrivelled and often partly, or completely lacking. When more material is available it may be possible to separate either as a variety, or a distinct species the Piquetberg—Darling forms, which flower much earlier than those from further inland.

45. *O. longiscapum* Bak. in Bull. Herb. Boiss. 2nd Ser. I, 854.

Plants 30–60 cm. high. *Bulb* globose, 1–2 cm. diam. *Leaves*

3—5, vaginate, lowest leaf or leaves may be little more than sheaths, often sparsely pilose, upper leaves lanceolate, usually glabrous, 10—30 cm. long, 5—20 mm. broad near the base. *Inflorescence* dense, many-flowered, bracts ovate-cuspidate; pedicels 3—5 mm. long, shorter than the bracts. *Perianth-segments*, whitish or greenish-yellow with a green median stripe, slightly cucullate and barbate at the apex 7—10 mm. long, 2—3 mm. broad. *Stamens* 5—7 mm. long, lanceolate, 3 inner broader than 3 outer. *Ovary* ovoid. *Style* slender, stigma papillose, together as long as the ovary.

Hab. Cape Province. Alexandria Div.: Klipfontein, *Galpin* in Nat. Herb. 10738. Bathurst Div.: Trapps Valley, *Daly* 606; Kowie,



MAP VII.

L. L. Britten 5578. Queenstown Div.: Gwatyu, *Galpin* 8193. Basutoland, Measite, *Dieterlen* 1038b; Berea Mt., *Dieterlen* 1038.

Natal. Vryheid Div.: Lancaster Hill, *Galpin* 9695. Estcourt Div.: Tabamhlope Res. Station, *West* 554, 555; Mahwaga Mt., *Evans* 644; Weenen, *West* 1443; Howick, *Medley Wood* 5454. (From type locality.)

This species merges with *O. attenuatum* Leighton. Baker cites Wood 5354 as his type.

It is linked with *O. Bolusianum* Bak. forma c (*O. Galpinii* Bak.) from which it differs chiefly in size, and in the density of the inflorescence.

Fl. Nov.—May.

[Fig. 45. Map VII.]

46. *O. attenuatum* Leighton in Journ. S.A. Bot. IX, 112. *O. angustifolium* L. Bolus in S.A. Gard. XXIV (1934) 50.

Plants up to 90 cm. high, usually 30—50 cm. *Bulb* globose or ovoid, 10—25 mm. diam. *Leaves* 2—5, vaginate, vagina often ciliate especially when young, lamina attenuate, thin usually glabrous but sometimes ciliate or pilose, up to 25 cm. long, 4—12 mm. broad. *Inflorescence* many-flowered, compact, elongating considerably at the fruiting stage; bracts membranous, cuspidate from a broad base, up to 9 mm. long; pedicels 5—6 mm. long, rarely longer than the bracts. *Perianth-segments* spreading, white with a median green stripe (often very indistinct) on the under surface, sub-acute up to 1 cm. long, three outer 3 mm., three inner 4 mm. broad. *Stamens* up to 7 mm. long, filaments all expanded, three inner about twice as broad as the three outer. *Ovary* ovoid, 3—4 mm. long, style and stigma as long as or slightly longer than the ovary, stigma papillose. *Seeds* black, angled, rugose.

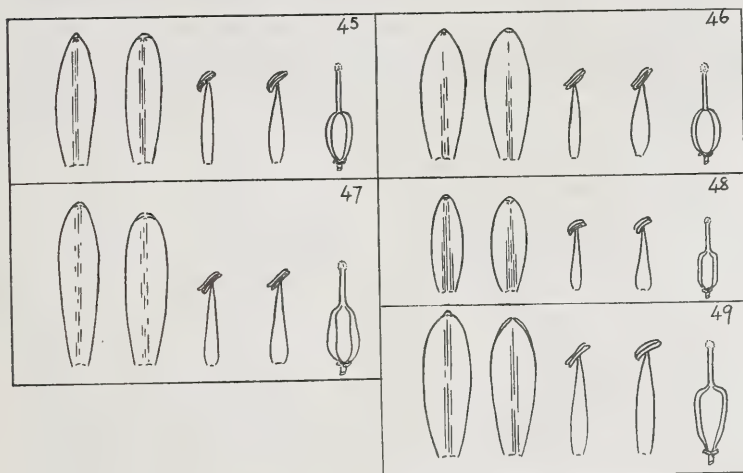
Hab. Cape Province. Clanwilliam Div.: Sandveld between Grey's Pass and Graafwater, *Leipoldt* 3249; Cederberg, *Stokoe* 7321; between Citrusdal and Clanwilliam, *Esterhuysen* 1420; Olifants River and at Villa Brakfontein, *Ecklon and Zeyher*; ad Brakfontein, *Pappe* in S.A. Mus. 48451 (probably collected by Ecklon and Zeyher since there is no evidence that Pappe went to the Clanwilliam District). Piquetberg Div.: Piquetberg, *Van Zyl* in Nat. Bot. Gdns. 2818/27; St. Helenafontein, *L. Bolus* in Bolus Herb. 22873. Tulbagh Div.: Tulbagh, *Pappe* in S.A. Mus. 23380. Paarl Div.: Wemmershoek, *Salter* in Bolus Herb. 22946; Bains Kloof, *Schlechter* 9121. Cape Div.: Kanonberg, near Durbanville, *Salter* 1914; Vygekraal, *Wolley Dod*, 317, 2291; (Cape Peninsula) near Hertzog, Retreat, *Wolley Dod* 2305; between Smitswinkel and Olifantsbosch, *Salter* 4259; Lower Klasjagers River, *Galpin* 12736; Arendskop, *Compton* 10312; Kenilworth Racecourse, *Salter* 7138; Keurboom Park, *Adamson* 3495; Table Mt., Jubilee Buttress, *Esterhuysen* 11388, ledges on Porcupine Buttress, *Esterhuysen* 11396, Africa Ravine, *Esterhuysen* 11496. Caledon Div.: Sandy Flats, Danger Point, *Pillans* 9540; Aries Kraal, *Leighton* 954. Swellendam Div.: Between Bonnievale and Barrydale, *Hurling and Neil* in Bolus Herb. 22871; between Ladismith and Barrydale, *Hurling and Neil* in Bolus Herb. 22872. Montagu Div.: Montagu Baths, *Guthrie* 2780. Riversdale Div.: Still Bay, *L. Bolus* in Bolus Herb. 20975 (*Type*); Corente River Farm, *Muir* in Herb. Galpin 5399; near Riversdale, *Muir* 2940; Onverwacht, Albertinia, *Muir* 1161. Worcester Div.: Hex River

Valley, *Davidson* 30 (S.A. Mus. 140); Moraine Kloof, *Esterhuysen* 9391. Laingsburg Div.: Bantams Karoo, *Compton* 12152. Prince Albert Div.: Bezemfontein, *Andreae* 1325. Oudtshoorn Div.: Near Congo Caves, *Bolus* 12412. Mossel Bay Div.: Between Gouritz Mouth and Cooper Siding, *James* 334644; Mossel Bay, *Black* in Herb. Marloth 7378. George Div.: *Guthrie* 4385. Knysna Div.: Knysna, *Duthie* 1149; Keurbooms River, *Fourcade* 6279. Uniondale Div.: Twee Rivieren, *Esterhuysen* 7060; De Vlucht, Keurbooms River, *Fourcade* 6270. Humansdorp Div.: Eerste Rivier, *Fourcade* 2370.

Fl. Sept.—Jan.

[Fig. 46. Map. VII.]

This species merges with *O. longiscapum* and it is doubtful whether they are really distinct.



45. *O. longiscapum*. 46. *O. attenuatum*. 47. *O. crispifolium*.
48. *O. Bolusianum*. 49. *O. natalense*. (All figures $\times 2$.)

47. *O. crispifolium* Leighton sp. nov.

Plantae alt. ad 30 cm. *Bulbus* globosus vel depresso-globosus, 10—15 mm. diam. *Folia* 3—4, vaginata, superposita, laminis puberulis vel glabris, marginibus crispulatis, ciliatis longis. *Inflorescentia* multiflora; bracteae e basi lata apiculatae. *Perianthii* segmenta albida, externe roseata vel cinnamomea, vittis medianis saturatoribus, apicibus leviter cucullatis. *Stamina* erecta, subulata, tria interiora latiora.

Ovarium ovoideum, viride, stylo stigmatheque albis. *Capsula* oblonga, semina atra, rugosa, angulata.

Hab. Cape Province. Laingsburg Div.: Whitehill Ridge, *Leighton* 270 (*Type* in Bolus Herb. and Herb. Nat. Bot. Gdns.), *Compton* 14655; Matjesfontein, nr. station on Dwyka, *Marloth* 10759, 9837, 9587; Dwars-in-den-Weg, *Marloth* 9841, Bantams Karoo, *Compton* 12152.

Plants up to 30 usually about 20 cm. high. *Bulb* globose or depressoglobose, 10—15 mm. diam. *Leaves* 3—4, vaginate, the lowest is often merely a sheath without a lamina, the second leaf cordate, 1 cm. long, 1 cm. broad, third and fourth ovate or lanceolate, up to 5 cm. long, 1 cm. broad; margins much crisped usually with widely spaced, fine cilia, surfaces covered with fine downy hairs at least when young; occasionally the plant is entirely glabrous. *Inflorescence* many-flowered, fairly dense; bracts apiculate from a broad base, shorter than the pedicels; pedicels 5—8 mm. long. *Perianth-segments* whitish above, pink or cinnamon beneath with median stripe of a deeper shade, 8—12 mm. long, 2—3 mm. broad, apices slightly cucullate. *Filaments* subequal subulate. *Ovary* ovoid green, style and stigma white, together as long as the ovary.

Fl. Oct.—Nov.

[Fig. 47. Map VII.]

This species shows affinities with *O. Bolusianum*, Forma γ which occurs in the Oudtshoorn Div., and Forma δ from Port Elizabeth.

48. ***O. Bolusianum*** Bak. Journ. Linn. Soc. XIII, 279.

Plants up to 30, usually 15—20 cm. high. *Bulb* ovoid or globose 7—14 mm. diam. *Leaves* 2—3, vaginate, entirely glabrous or with ciliate margins, or setose in varying degrees; lowest leaf ovate or cordate up to 25 mm. long, up to 15 mm. broad; upper leaves ovate, lanceolate or ligulate, 2—10 cm. long, 5—12 mm. broad. *Peduncle* slender, wiry, often flexuose. *Inflorescence* lax, up to 20-flowered; bracts acuminate from a broad base, shorter than the pedicels; pedicels ascending, 5—10 mm. long. *Perianth-segments* white, with a median green stripe on the under surface, 6—8 mm. long, 2—2.5 mm. broad. *Stamens* more than half as long as the perianth, outer filaments linear lanceolate, inner filaments lanceolate, twice as broad as the outer. *Ovary* ovoid, as long as the style and stigma together.

Hab. Cape Province. Graaff-Reinet Div.: Hills round Graaff-Reinet, Sept., 1871, *Bolus* 22951 (*Lectotype*, published by Baker under *Bolus* 96 which comprises three separate collectings—see under). Albany Div.: Alicedale, *Cruden* 131 (Alb. Mus. Herb.); Cradock Rd.—Karoo Flats towards Carlisle Bridge, *Dyer* 2107, 3007.

Fl. Sept.—Dec.

[Fig. 48. Map VII.]

Forma β . *O. pubescens* Bak. Journ. Linn. Soc. XIII, 282.

Hab. Cape Province. Graaff-Reinet Div.: Hills behind Schimper's Woolwashery, Aug. 30th, 1865, *Bolus* 22995. Albany Div.: Alicedale, *Cruden* 48; Grahamstown, *Daly & Sole* 345, *Rogers* 4424. Bathurst Div.: Kareiga River, *L. L. Britten* 2503. Uitenhage Div.: Coerney, *Paterson* 67. Victoria East Div.: Naude's Hoek, near Alice, *Giffen* 780. Oudtshoorn Div.: Rust en Vrede, *Marloth* 12138; Congo, *Bolus* 22950. Prince Albert Div.: Near Prince Albert, *Bolus* 12409.

[Map VII.]

Forma γ . Short densely setose leaves.

Hab. Oudtshoorn Div.: Congo Valley, *Marloth* 14085.

[Map VII.]

Forma δ . Leaves setose, margins crisped and often densely ciliate.

Hab. Uitenhage Div.: Kamaehs, near Port Elizabeth, *Paterson* 438; Redhouse, *Rogers* 2128, *Paterson* 2629. In solo carroides ad Zwartkops River, Nov., S.A. Mus. 23413. (Attributed to *Pappe* in S.A. Mus. but he is not known to have gone farther East than George. This is almost certainly an *Ecklon & Zeyher* collection.

[Map VII.]

Forma ϵ . *O. Galpinii* Bak. Fl. Cap. VI, 516. Leaves tougher and longer, plants, in general, larger, peduncles stouter.

Hab. Queenstown Div.: Mt. sides, moist places, 4,000 ft., *Galpin* 1552 B. Somerset East Div.: Klyn Visch River, *MacOwan* 1838, 1897.

[Map VII.]

Forma ϵ is intermediate between this species and *O. longiscapum* Bak.

O. trichophyllum as described by Baker in Engl. Jahrb. XV, Heft 3, 7, might be either Forma γ or δ .

O. Bolusianum Bak. is based on *Bolus* 96, which, in the Bolus Herbarium consists of three separate collectings, viz. :—

1. Hills round Graaff-Reinet, Sept., 1871. This agrees with the description except for the fact that the leaves are glabrous with minutely ciliate margins. I have selected this as the lectotype and given it the Bolus Herbarium number 22951.
2. Hill behind Schimper's Woolwashery, Graaff-Reinet, Aug. 30th, 1865. This seems to represent the species which is called *O. pubescens*, and which I regard as a form of *O. Bolusianum*.
3. Oudeberg, 3750 ft., 5 Dec., 1865. This probably represents an imperfect specimen of *O. comptum*.

49. *O. natalense* Bak. Kew Bull., 1893, 210.

Plants 5—15 cm. high. *Bulb* ovoid, 5—10 mm. diam. *Leaves* 2—3, lowest ovate-lanceolate, upper lanceolate, sparsely pilose, 3—10 cm. long, 4—12 mm. broad, margins conspicuously ciliate. *Inflorescence* scarcely exceeding the leaves, bracts long-acuminate from a broad base, longer than the ascending pedicels. *Perianth-segments* white, faintly striped with green on the under surface, 10—12 mm. long, 3—3.5 mm. broad, somewhat cucullate at the apex. *Stamens* more than half as long as the perianth, filaments linear, three inner longer and wider than the three outer. *Ovary* obconic, style slender, about as long as the ovary.

Hab. Natal. Bamboo Mt., Underberg, *McClellan* 694 (Natal Herb. 29514); Amawahqua Mt., *Medley Wood* 4567 (*Type*).

Fl. Mar.—April.

[Fig. 49. Map VII.]

50. *O. pilosum* L. f. Suppl. 199. Thunb. Prodr. 61; Fl. Cap. 313; Kunth Enum. IV. 370; Bak. in Journ. Linn. Soc. XIII 282. *O. munitianum* Kunth Enum. IV, 351.

Plants 15—40 cm. high. *Bulb* globose 10—25 mm. diam., with brittle, black, shiny outer tunics which are often produced to form a short neck. *Leaves* 3—5, lanceolate to linear, vaginate at the base, lower surface sometimes pilose, upper surface glabrous, up to 20 cm. long and 1 cm. broad, shrivelled and often completely absent at the flowering time, apex acute or subacute, margins ciliate, at least in the young leaves, cilia short and sparse. *Peduncle* often flexuose, minutely punctate when dried, bracts aristate from a broad base, pedicels spreading in flower, incurved in fruit. *Perianth segments* creamy-white above, greenish or brownish on the under surface, 7—10 mm. long, 3—4 mm. broad. *Stamens* more than half as long as the perianth, 3 outer filaments linear, 3 inner gradually expanded towards the base about twice as broad as the outer. *Ovary* ovoid or obovoid, about 4 mm. long, style and stigma 3 mm. *Seeds* black with spiny papillae.

Hab. Cape Province. Piquetberg Div.: Berg River Bridge, *L. Bolus* in Bolus Herb. 22751; nr. Berg River Station, *Leighton* 193; bottom of Versfeld's Pass, *Pillans* 7121; near Piquetberg, *Bolus* 13655. Tulbagh Div.: Tulbagh, *Marloth* 9838; Winterhoek, *Bolus* 5267; Steendaal, *Pappe* in S.A. Mus. 23349; Nieuwekloof, *MacOwan* 3233. Ceres Div.: Rosendalfontein, *Pillans* 9568. Cape Div.: Cape Peninsula, Roodebloem, *Zeyher* 5049 (in S.A. Mus. 23347); Signal Hill, above Tamboers Kloof, *Michell* in Bolus Herb. 16777; Lion's Flank, *Penfold* 101. Worcester Div.: Rabiesberg, *Van der Gaast*, in Nat. Bot. Gdns,

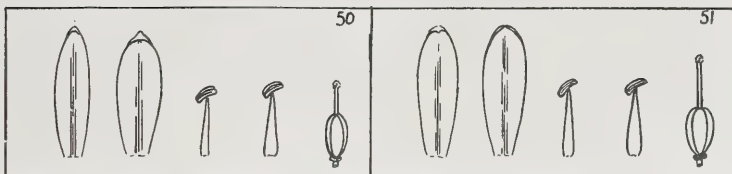
2673/35 ; nr. Worcester, *L. Bolus* in Bolus Herb. 22722, *Marloth* 12563 ; Waaihoek, *Esterhuysen* 8279 ; De Doorns, *Bolus* 13061 ; Hex River, *Davidson* 6 (in S.A. Mus. 11). Swellendam Div. : Barrydale, *Galpin* 4766. Riversdale Div. : Corente River Farm, *Muir* in Herb. *Galpin* 5397 ; near Riversdale *Schlechter* 1894.

Fl. Sept.—Nov.

[Fig. 50. Map VII.]

51. *O. pullatum* Leighton sp. nov.

Plantae alt. ad 30 cm. *Bulbus* ovoideus, 15—20 mm. diam. tunicis duris nigris in collo productis. *Folia* 3—4, vaginata, lanceolata, acuta long. 5—8 cm., lat. 5—12 mm., marginibus dense ciliatis. *Inflorescentia* pauciflora, pedunculo siccatō punctato, flexuoso ; bractae aristatae. *Perianthii segmenta* supera albida, infera fusca vel viridia, patentia. *Filamenta* tria exteriora linearia, tria interiora vix basi expansa. *Ovarium* ovoideum ; stylus excentricus, ovario multo longior.



50. *O. pilosum*. 51. *O. pullatum*. (All figures $\times 2$.)

Hab. Cape Province. Calvinia Div. : Hills N. of Calvinia, *Marloth* 12780 (*Type*) ; *Marloth* 10269 ; sine loc., *Marloth* 9854.

Plants up to 30 cm. high. *Bulb* ovoid with hard, shiny, black outer tunics, which are produced into a neck 2—4 cm. long. *Leaves* 3—4, vaginate, lanceolate, acute with ciliate margins, cilia long, fine and fairly dense. *Inflorescence* few-flowered, peduncle finely spotted in the dry state, bracts aristate less than half the length of the pedicels, pedicels spreading at flowering time. *Perianth-segments* spreading, acute or subacute, whitish on the upper surface, brownish or tinged with green on the lower, 9—10 mm. long, 3—3.5 mm. broad. *Stamens* more than half the length of the perianth segments, three outer filaments linear, three inner slightly expanded towards the base. *Ovary* ovoid 3 mm. high, style and stigma excentric, 5 mm. long.

Fl. Dec.

[Fig. 51. Map VII.]

This species has been described from dried material which would have been inadequate but for the detailed notes attached to his herbarium sheets by the late Dr. Rudolf Marloth.

The affinity of *O. pullatum* is with *O. pilosum*, from which it differs in the relative length of the ovary and style and in the nature of the ciliation on the leaf margins.

52. *O. subulatum* Bak. in Gard. Chron. 1874 I, 723. *O. comptum* Bak. in Journ. Linn. Soc. XIII, 274 (in part).

Plants up to 30 cm. high. *Bulb* globose or depresso-globose, 10—20 mm. diam., produced into a neck composed of fibrous old leaf bases. *Leaves* 3—6, linear channelled down the face, soft, often as long as the inflorescence when fully developed, 1—2 mm. diam., minutely denticulate near the base. *Inflorescence* few—many-flowered; bracts membranous broad, deltoid-cuspidate; pedicels 2—3 mm. long, erect or ascending. *Perianth-segments* white with a median greenish or brown stripe, obtuse 5—6 mm. long 1.5—2 mm. broad. *Stamens* a little more than half as long as the perianth, filaments linear-lanceolate or lanceolate. *Ovary* ovoid, style and stigma together as long as the ovary.

Hab. Cape Province: Uitenhage Div.: Zwartkops River, *Ecklon & Zeyher* 939, 1066; Redhouse, *Paterson* 2630, 226. Somerset East Div.: Somerset East, *MacOwan* 1965 (*Type*); Boschberg, *MacOwan* 2067, 1843. Albany Div.: Grahamstown, *Daly* 849, *Daly & Sole* 436, *Leipoldt* 4121; Brak Kloof, *White* 139; farm "Strowan", *L. L. Britten* 6577; Upper Gletwyn, *Dyer* 3311; Alicedale, *Cruden* 176; Trapps Valley, *Daly* 583. King Wm's. Town Div.: Hogsback Mt., *Rattray* 209; Middle-drift, *Crampton* 116 (in Herb. Albany Mus.).

Fl. Nov.—Jan.

[Fig. 52. Map VIII.]

The following specimens are similar to those cited above but very much larger in every respect, suggesting the occurrence of polyploidy.

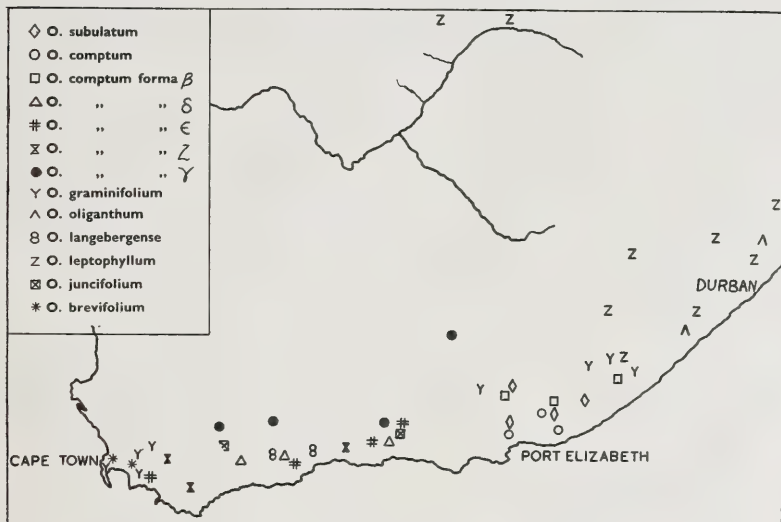
Uitenhage Div.: Van Staaden's, *Paterson* 868. Albany Div.: Stone's Hill, *Daly* 534; Grahamstown, *Rogers* 27407; Alicedale, *Cruden* 197.

53. *O. comptum* Bak. in Journ. Linn. Soc. XIII, 274; Fl. Cap. VI, 511.

Plants 15—40 cm. high. *Bulb* globose or depresso-globose, 10—25 mm. diam. with brown or greyish leathery tunics, often crowned with fibres from old leaf bases which sometimes form a neck. *Leaves* few—many, synanthous, linear, expanded slightly near the base where they clasp the peduncle, veins prominent in the dried state, 5—40 cm. long, base 3—5 mm. broad, 1—2.5 mm. broad above, apex obtuse or subacute, margins, at least in the lower part, minutely ciliate or denticulate. *Inflorescence* few—many-flowered; bracts deltoid or ovate, with a long

cuspid, as long as, or longer than, the pedicels; pedicels 2—6 cm. long. *Perianth-segments* white with a median stripe, greenish when young, red-brown with age, obtuse, 6—8 mm. long, 2—3 mm. broad. *Stamens* a little more than half as long as the perianth, three outerfilaments linear-lanceolate, three inner lanceolate. *Ovary* ovoid or obovoid, style and stigma together about as long as the ovary.

Hab. Uitenhage Div.: Zwartkops River, *Ecklon & Zeyher* 942 (*Lectotype*); Enon, *Thode* A 1136; Aloes, *J. L. Drege* 3137; Redhouse, *Paterson* 254, 254a; Coega, *Rogers* 2118. Port Elizabeth Div.: Hills



MAP VIII.

N.E. of Port Elizabeth, *Long* 882; North-end Cemetery, *Long* 138. Albany Div.: Upper Gletwyn, *Dyer* 3350. Bathurst Div.: Southwell, *Schonland* 3325.

Fl. Nov.—Feb.

[Fig. 52. Map VIII.]

Forma β . Plants larger and coarser, inflorescence denser.

Hab. Albany Div.: Howieson's Poort, *Galpin* 3096. Somerset East Div.: Boschberg, *MacOwan* 1843. Tembuland, Bazeia, *Baur* 393.

[Map VIII.]

Forma γ . Leaves conspicuously thickened on the margins and with prominent nerves, broader than in Forma β , 2—4 mm. broad.

Hab. Uniondale Div. : Hot Springs, *Esterhuysen* 6354. Laingsburg Div. : Matjesfontein, *L. Bolus* in Nat. Bot. Gdns. 225/14. Prince Albert Div. : Prince Albert, *Mathews* in Nat. Bot. Gdns. 4415/14. Middelburg Div. : Bangor Farm, *H. H. Bolus* in Bolus Herb. 14079.

[Map VIII.]

Forma δ . Leaves longer, narrower and less rigid than in the typical form, often flexuose, much shorter than the inflorescence.

Hab. Knysna Div. : Springfield, *Fourcade* 2007 ; Belvidere, *Fourcade* 502 ; Plettenberg Bay, *Pappe* in S.A. Mus. 23374. Riversdale Div. : Garcia's Pass, *L. Bolus* in Bolus Herb. 19506 ; Riversdale, *Muir* in Herb. Marloth s.n. Mossel Bay Div. : *Bolus* 22961. Swellendam Div. : In campis carroid, *Pappe* in S.A. Mus. 23368.

[Map VIII.]

Forma ϵ . Leaves long and wiry almost glabrous. Inflorescence dense.

Hab. Uniondale Div. : Hills N.E. of Avontuur, *Fourcade* 4543. Knysna Div. : Knysna, *Duthie* in Nat. Bot. Gdns. 166/15 ; Wilderness, *Compton* 17454 ; Rocks above the Heads, *James* 1645. Riversdale Div. : Hills near Riversdale, *Muir* 3153. Caledon Div. : Mossel River, *Hermanus*, *Guthrie* in Bolus Herb. 17027.

[Map VIII.]

Forma ξ . Very similar to the typical but leaves slightly narrower, almost glabrous, flowers larger.

Hab. George Div. : Near George, *Schlechter* 2233. Bredasdorp Div. : Mierkraal, *Schlechter* 10528. Caledon Div. : Riviersondereinde, *Schlechter* 9845.

Fl. Dec.—March.

[Map VIII.]

54. **O. graminifolium** Thunb. Prodr. 61. Flor. Cap. edit. Schultes, 313 ; Kunth Enum. IV, 358 ; Bak. Journ. Linn. Soc. XIII, 274 (in part) ; Bak. Fl. Cap. VI, 511 (in part).

Plants 30—50 cm. high. *Bulb* globose, 1—2 cm. diam. produced into a neck 5—10 cm. long, covered with a sheath of fibrous leaf bases. *Leaves* 3—6, synanthous but often shrivelled near the tips at flowering time, narrow, semiterete, wiry, grooved down the upper surface, 20—60 cm. long, 1—1.5 mm. broad, flattened near the base and clasping the peduncle within the neck-sheath. *Inflorescence* 2—10-flowered, narrow, peduncle wiry, pedicels 3—7 mm. long, bracts broad, narrowed abruptly at the apex into an awn, usually exceeding the pedicels. *Perianth-segments* spreading, obtuse, creamy-white with a faint green median stripe on the under surface, about 10 mm. long, 3—3.5 mm. broad.

Stamens a little shorter than the perianth, filaments lanceolate, sub-equal. *Ovary* green, obovoid, narrowed considerably at the base, style and stigma as long as the ovary, stigma papillose.

Hab. Cape Province. Cape Div.: Doornhoogte, Cape Flats, *Zeyher* 1681; Brackenfel, *Esterhuysen* 4060; (Cape Peninsula) Kenilworth Race Course, *Bolus* 7052, *Salter* 5787, 8606; Bergvliet, *Marloth* 8406; Steenberg Plateau, *Goulimis* in *Bolus* Herb. 22959; Modderdam, *Salter* 8601; near Cirkels Vlei, *Salter* 3045 B; Patrys Vlei, *Salter* 8603; Marsh W. of Paulsberg, *Salter* 5956. Stellenbosch Div.: Jonkershoek, *Esterhuysen* 8378; Helderberg, *Esterhuysen* 7673; Somerset Sneekop, *Stokoe* 9195; Sir Lowry's Pass, *Compton* 14218. Caledon Div.: Sugar Loaf Mt., *Stokoe* 8856; Palmiet River Mouth, *Levy's* in *Bolus* Herb. 22960; near Rooi Els, *Pillans* 8273. Paarl Div.: Drakenstein Valley, *Esterhuysen* 9525; French Hoek For. Reserve, *Leighton* 1001.

The following specimens are very similar to *O. leptophyllum* but on account of the longer, bent neck I prefer to place them in *O. graminifolium* Thunb.

Somerset East Div.: Middleton, *Rogers* in B.H. 12940. Victoria East Div.: Alice, "Dal Eendracht", *Giffen* in *Bolus* Herb. 2307B. Stutterheim Div.: Dohne Research Stn., *Acoks* 9449. Komgha Div.: Near Komgha, *Flanagan* 2246. Queenstown Div.: Hopewell, Katberg, *Galpin* 8391.

Fl. Nov.—Mar.

[Fig. 54. Map. VIII.]

The neck of the bulb is usually bent sharply in the middle at an angle of approximately 90°. This feature seems to be connected with the fact that the plants frequently grow embedded in dense Restionaceous tufts.

The figures and descriptions cited by Baker in the *Flora Capensis* represent more than one species. Of seven specimens cited, five are of the type chosen above as *O. graminifolium*, one is *O. leptophyllum* from Natal and one I have not seen.

55. *O. oliganthum* Bak. Fl. Cap. VI, 510.

Plants 10—20 cm. high. *Bulb* globose, 5—10 mm. diam. with brownish tunics and crowned with the fibrous remains of old leaf bases, often growing in clusters. *Leaves* many, filiform, glabrous, about as long as the inflorescence. *Inflorescence* few-flowered, lax, bracts broad at the base with a short awn, as long as the pedicels, rarely shorter than the pedicels; pedicels 3—5 mm. long, increasing to as much as 12 mm. in fruit. *Perianth-segments* white with a greenish median stripe, obtuse, 5—6 mm. long, 1—1.5 mm. broad. *Stamens* subequal, filaments

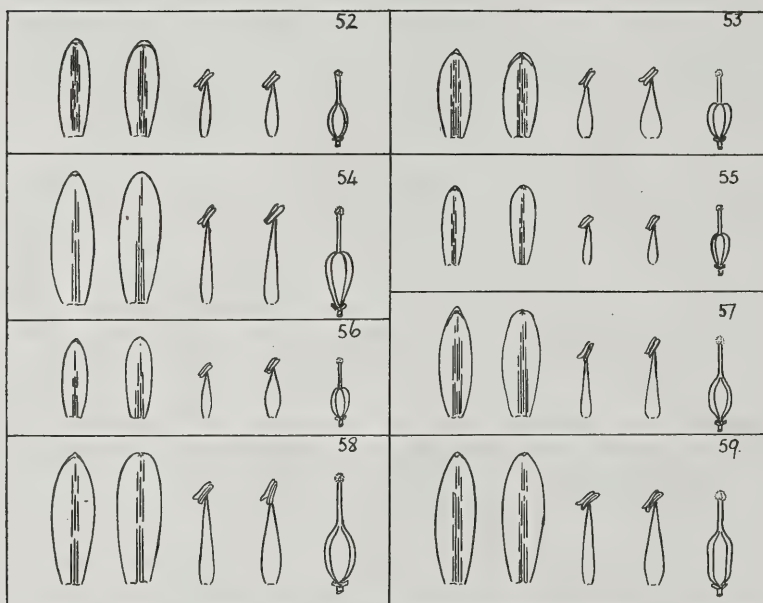
lanceolate, a little more than half as long as the perianth. Ovary obconic, style and stigma slightly longer than the ovary.

Hab. Natal. Field's Hill, Wood 1973 (*Type*). Cape Province. Kentani Div.: On rocks, Pegler 1182.

This species differs from *O. leptophyllum* Bak. in its size and in having fewer-flowered, laxer inflorescences.

Fl. Feb.—Mar.

[Fig. 55. Map VIII.]



52. *O. subulatum*. 53. *O. comptum*. 54. *O. graminifolium*. 55. *O. oliganthum*.
56. *O. langebergense*. 57. *O. leptophyllum*. 58. *O. juncifolium*. 59. *O. brevifolium*.
(All figures $\times 2$.)

56. *O. langebergense* Leighton sp. nov.

Plantae alt. ad 14 cm. *Bulbus* globosus, tunicis griseis vel brunneis in collo breve productis. *Folia* 3—10, filiformia inflorescentia aequilonga. *Inflorescentia* pauciflora, laxa, bracteis parvis, floribus distantibus. *Perianthii* segmenta albida, inferne laete viridi-vittata, obtusa vel subacuta. *Filamenta* lanceolata, tria interiora quam exteriora longiora et latiora. *Ovarium* ovoideum, stylo cum stigmate brevior.

Hab. Cape Province. Mossel Bay Div.: Langeberg, on rocky

ledges 1,000—1,300 ft., *Muir* 1314 (*Type*). Riversdale Div.: Rocks at the Glen, 900 ft., *Muir* 3005.

Plants up to 14 cm. high. *Bulb* globose, 6—12 mm. diam., with brown or grey, papery tunics which are produced into a short neck. *Leaves* 3—10, filiform, wiry, glabrous except for minute ciliation near the base, veins conspicuous in old leaves, about as long as the inflorescence, under 1 mm. broad, except at the base. *Inflorescence* slender, few-flowered, peduncle wiry, flowers distant; bracts small 2—3 mm. long; pedicels 5—10 mm. long. *Perianth-segments* whitish with a faint greenish median stripe on the under surface, obtuse or subacute, 5—6 mm. long, 2—2.5 mm. broad. *Stamens* more than half as long as the perianth, filaments lanceolate, 3 inner longer and about twice as broad as the outer. *Ovary* ovoid, style and stigma slender longer than the ovary.

Fl. Dec.—April.

[Fig. 56. Map VIII.]

57. *O. leptophyllum* Bak. Flor. Cap. VI, 502.

Plants 20—35 cm. high. *Bulb* globose, 10—20 mm. diam., tunics leathery, brownish-grey, crowned with fibrous bases of previous leaves, often forming a neck 4—8 cm. long. *Leaves* 2—many, synanthous or hysteranthous, linear, fairly rigid, margins and veins conspicuous in old leaves, 20—30 cm. long, 0.5—3 mm. broad. *Inflorescence* many-flowered, narrow, often 2—3 to a bulb; bracts broad with a long cusp, about as long as the pedicels; pedicels 5—10 mm. long, ascending or erect. *Perianth-segments* white with a median green stripe, narrow, obtuse, 6—10 mm. long, 1.5—3 mm. broad. *Stamens* more than half as long as the perianth, filaments lanceolate three inner slightly broader than the three outer. *Ovary* ovoid or obovoid, tapering to the base, almost stipitate. *Style* and stigma as long as, or longer than, the ovary. *Capsule* broad, truncate at the top.

Hab. Natal. Near Botha's Railway Station, *Medley Wood* 4774 (*Type*); Sevenfontein, *Wylie* in Natal Herb. 10446; Maritzburg—Richmond Rd., *Warren* 11 in Nat. Herb. Pretoria; Estcourt, *West* 320, 337, 332; Draycott Hill, *Acoks* 10582; Inanda, *Wood* 658; Zwartkop, *Wylie* Herb. Natal 11647; Bushmans River, *Wood* 10891. Basutoland: Leribe, *Dieterlen* 651; Maseru, *Dieterlen* 1038a. Transvaal: Magaliesberg, *Moss* 13487; Ermelo, *Henrici* 1045. Potchefstroom, *Louw* 442. Cape Province, Albert Div.: Molteno, Looperberg, *Mogg* 2804. Stutterheim Div.: Cumakala River, *Acoks* 9201. Transkei: Umtata, *Dyer*, s.n. Komgha Div.: Komgha, *Flanagan* 2252.

Fl. Sept.—Dec.

[Fig. 57. Map VIII.]

58. *O. juncifolium* Jacq. Hort. Schön. i, 46, t. 90; Kunth Enum. IV, 358 (in part).

Plants up to 70 cm. high. *Bulb* globose or depresso-globose, 2—5 cm. diam. frequently with greyish leathery tunics. *Leaves* many, semiterete from a broad, flattened base, and terete at the apex, erect, semirigid, shorter than the inflorescence, 15—30 cm. long, 7—10 mm. broad at the base. *Inflorescence* 1—3 to a bulb, many-flowered; bracts usually shorter than the pedicels; pedicels 4—8 mm. long. *Perianth-segments* white with a faint green median stripe on the under surface, 5—10 mm. long, 1·5—3 mm. broad. *Stamens* more than half as long as the perianth, 3 outer filaments linear-lanceolate, 3 inner lanceolate. *Ovary* obovoid; style and stigma about as long as the ovary, stigma conspicuously capitate.

Hab. Cape Province. Uniondale Div.: Prince Alfred's Pass, *Fourcade* 2477. Swellendam Div.: Between Bonnievale and Barrydale, *Hurling and Neil* in Nat. Bot. Gdns. 2404/31.

Fl. Dec.—Jan.

[Fig. 58. Map VIII.]

Jacquin's figure represents a somewhat etiolated, garden-grown plant but in all essential characters there is sufficient agreement to justify the placing of the specimens listed above under this species.

59. *O. brevifolium* Leighton in Journ. S.A. Bot. IX, 109.

Plants up to 30 cm. high, usually somewhat shorter. *Bulb* depresso-globose, 2 cm. diam. white with brownish tunics partly adhering. *Leaves* many, up to 13 cm. long, 3 mm. broad, shrivelled at flowering time but apparently linear, channelled down the face, apex acute, base broad encircling the peduncle. *Inflorescence* few—many-flowered; bracts cuspidate from a broad base, equal to, or exceeding the pedicels; pedicels 5—7 mm. long. *Perianth-segments* creamy-white, tinged with green on the under-surface, becoming pure white with age, up to 10 mm. long, 3—5 mm. broad, obtuse. *Filaments* 6—7 mm. long, all gradually expanded towards the base, outer 1·5 mm., inner 2 mm. broad. *Ovary* ovoid, style slender, stigma papillose. *Seeds* rugose.

Hab. Cape Province. Cape Peninsula: Patrys Vlei, *Salter* 8602 (*Type*). Caledon Div.: Foothills of the Steenbras Plateau, *Stokoe* 7424; Caledon, *Marloth* 6115.

Fl. Feb.

[Fig. 59. Map VIII.]

60. *O. capillare* Wood and Evans in Journ. Bot. XXV, 490.

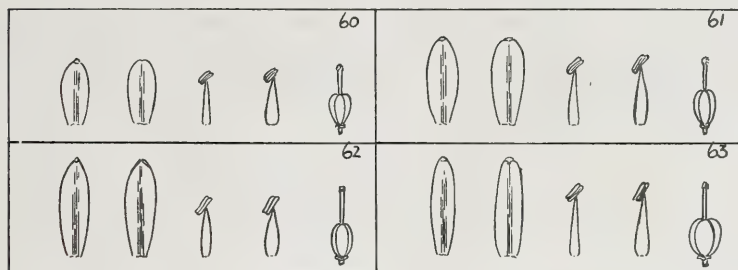
Plants 10—15 cm. high. *Bulb* ovoid 6—10 mm. diam. with brownish papery tunics produced into a neck 2—3 cm. long. *Leaves* 3—6, glabrous,

filiform above, clasping the peduncle at the base, 8 cm. or more in length. *Inflorescence* 1—2 to a bulb, slender, wiry, lax; bracts 4 mm. long; pedicels 10—25 mm. long, distant, ascending. *Perianth-segments* white, with faint green median stripe, oblong, 3—4 mm. long, 1—1.5 mm. broad. *Stamens* a little shorter than the perianth, filaments linear-lanceolate. *Style* slender, about as long as the obconic ovary.

Hab. Natal. Near Newcastle, *J. Medley* Wood 6502. Orange Free State: Bester's Vallei, Witzies Hoek, *Bolus* 8261.

Fl. Jan.

[Fig. 60. Map IX.]



60. *O. capillare*. 61. *O. Schlechterianum*. 62. *O. Rogersii*. 63. *O. Zeyheri*.
(All figures $\times 2$.)

61. *O. Schlechterianum* Schinz in Bull. Herb. Boiss. II, 223.

Plants 6—25 cm. usually 10—15 cm. high. *Bulb* ovoid 5—15 mm. diam. produced into a neck 1—4 cm. long. *Leaves* 3—10, subterete, filiform, glabrous, weak, 10—30 cm. long, 1—2 mm. diam. *Inflorescence* shorter than the leaves, slender, lax, few-flowered; bracts membranous acuminate from a broad base, less than half as long as the pedicels; pedicels 10—15 mm. long in flower, longer in fruiting specimens. *Perianth-segments* white with a faint green median stripe which fades reddish or becomes pure white with age, narrow, subacute, spreading widely or even reflexing, 5—7 mm. long, 2—3 mm. broad. *Stamens* more than half as long as the perianth, filaments lanceolate, three inner slightly broader than three outer. *Ovary* globose or somewhat obovoid, style and stigma shorter than the ovary. *Capsule* globose. *Seeds* angled rugose.

Hab. Cape Province. Cape Peninsula: Table Mt., *Schlechter* 138 (*Type*); Spring Buttress, *Esterhuysen* in Bolus Herb. 22954; Kasteel's Poort, *Marloth* 5624b; Blinkwater Ravine, *Andreae* 252, *Marloth* 9850; India Waterfall, *Marloth* 6676; Plateau S. of Slangolie, *Andreae* 221; My-

burgh's Ravine, *Esterhuysen* 10018; Lower Plateau, *Esterhuysen* 11507; S. of Hely Hutchinson Reservoir, *Esterhuysen* 1783; Orange Kloof, *Wolley Dod* 2307; Skeleton Ravine, *Wolley Dod* 842; Window Gorge, *Gillett* 3392; Skeleton Gorge, *Esterhuysen* 62; Nursery Gorge, *Compton* 10384; above Klassenbosch, *Bolus* 7054; Constantiaberg, *Goulimis* in *Bolus* Herb. 22953, *Compton* 15458; Mountains beyond Red Hill, Simonstown, *Salter* in *Bolus* Herb. 22955; Devil's Peak, *Goulimis* in *Bolus* Herb. 22952. Paarl Div.: Wemmershoek Pk., *Esterhuysen* 11282.

Fl. Dec.—Feb.

[Fig. 61. Map X.]

Forma β . (*O. minimum* Bak.) Leaves lanceolate 10—20 mm. long margins ciliate, inflorescence up to 10 cm. high.

Hab. Stellenbosch Div.: Jonkershoek Twins, *Esterhuysen* in *Bolus* Herb. 23066; Forest Dept. Herbarium 279.

It seems almost certain from the evidence available that *O. Schlechterianum* is *O. niveum* Ait. Aiton's (or Solander's) description in *Hortus Kewensis* I, 440, bears little relation to the Burchell plant from Zwartwater Poort, Alexandria Div., which is figured under *O. niveum* in the Bot. Reg. t. 235 and cited by Baker in the Flor. Cap.

It is very probable that the plants sent by Masson in 1774 were from the Cape Peninsula or from the neighbouring mountains where *O. Schlechterianum* Schinz is now known to occur. Masson's first Journey, 1772—1773, was only as far as Swellendam.

62. *O. Rogersii* Bak. Flor. Cap. VI, 501.

Plants 10—20 cm. high. *Bulb* globose 5—10 mm. diam. *Leaves* 2—6, linear, glabrous, weak, 4—8 cm. long, 2—3 mm. broad. *Inflorescence* slender, few—many-flowered, lax; bracts acuminate, much shorter than the pedicels; pedicels spreading at flowering time but erect and adpressed to the peduncle in fruit. *Perianth-segments* narrow, cucullate, white with green median stripe on the under surface, 7—8 mm. long, 1.5—2 mm. broad. *Stamens* about half as long as the perianth-segments, filaments expanded—three inner wider than three outer. *Ovary* ovoid, style and stigma slender, about as long as the ovary.

Hab. Cape Province. George Div.: Geelhoutbosch, *L. E. Taylor*, 1633.

Fl. Dec.

[Fig. 62. Map X.]

This specimen has been identified from Baker's description with which it agrees well.

63. **O. Zeyheri** Bak. in Journ. Linn. Soc. XIII, 281. Fl. Cap. VI, 502.

Plants from 15—60 cm. high. *Bulb* globose or ovoid 15—30 mm. diam., outer tunics greyish, produced into a neck, 2—5 cm. long. *Leaves* 2—6, linear, glabrous, weak, channelled down the face, flattened at the base, often as long as the peduncle, 2—5 mm. broad. *Inflorescence* many-flowered, lax, often more than one to a bulb; bracts membranous, acuminate, much shorter than the pedicels; pedicels arcuate, ascending, 1—3 cm. long at flowering time, as much as 6 cm. in fruit. *Perianth-segments* creamy white, sometimes tinged with green on the outer surface, obtuse or subacute, slightly cucullate and minutely barbate at the apex, 5—8 mm. long, 1·5—2·5 mm. broad. *Stamens* a little more than half as long as the perianth segments, linear-lanceolate, subequal. *Ovary* globose, tapering towards the base, style slender, stigma papillose, style and stigma longer than the ovary. *Capsule* truncate, short, broad.

Hab. Cape Province. Uitenhage Div.: Zwartkops River, *Zeyher* 1686; Humansdorp Div.: nr. Humansdorp-Hankey Rd., *Fourcade* 5815. Port Elizabeth Div.: N.W. of Port Elizabeth, *Gillett* 2416. Albany Div.: On Flats, Grahamstown, *MacOwan* 1437, *Galpin* 21, *Britten* 582; Trapps Valley, *Daly* 667. East London Div.: Buffalo River, *Flanagan* 1719. Natal: Van Reenen, *Wood* 4532, 7400. Basutoland, *Dieterlen* 1264. Orange Free State: Hoopstad, *Goosens* 1306. Transvaal: Parys, *Potts* 518 (Grey Coll. Herb.). Middelburg Div.: Belfast, *Franks* in Nat. Herb. Pret. 9802; Wonderfontein, *Bolus* 12410; Ermelo, *Codd* in Nat. Herb. Pret. 387; Witwatersrand, *Dersley*, *Flugge-de Smidt* 8316 in Nat. Herb. Pretoria. Waterberg, Mosdene, Naboomspruit, *Galpin* M. 368. Rhodesia, *Flanagan* in National Herb. Pretoria 22827. S.W. Africa: Gt. Karasberg, *Pearson* Slad. Mem. Exped. 7987. Cape Prov., Prieska Div., Orange Riv., *Bryant* J. 182 in Nat. Herb. Pret. 5971 in McGregor Mus. Kimberley, Warrenton, *Wilman* McGregor Mus. 1134; Blaauwkrantz, *Acocks* 1895 (McGregor Mus. 4610.)

Fl. Oct.—April.

[Fig. 63. Map IX.]

This species varies in size and has a wide range of distribution but the essential characters are constant.

64. **O. karasbergense** Glover in Ann. Bol. Herb. I, 106.

Plants up to 25 cm. high. *Bulb* ovoid, elongate, 3—5 cm. diam. 8—10 cm. high, tunics coriaceous. *Leaves* 5—15, linear or linear-lanceolate, glabrous, 15—20 cm. long, 2—10 mm. broad at the base. *Inflorescence* dense, many-flowered; bracts scarious, ovate, acuminate, longer than the pedicels; pedicels erecto-patent, 10—12 mm. long. *Perianth-segments* whitish with a green median stripe, ovate-oblong 7—10 mm.

long, 2—3 mm. broad, apex cucullate, obtuse. *Stamens* subequal, filaments quadrately expanded near the base. *Ovary* with a crenate disc-like expansion near the base.

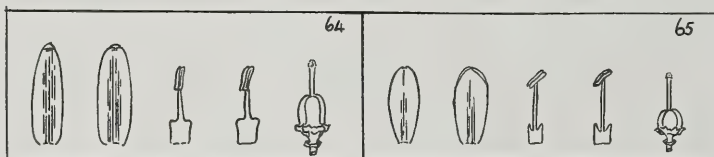
Hab. South-West Africa: Great Karasberg, Naruda Süd, Pearson in Sladen Mem. Expedition 8144, 7986, 8931; Karibib, Dinter 6796. Fl. Dec.—Jan.

[Fig. 64. Map X.]

This species may be identical with *O. Stapfii* Schinz Bull. Herb. Boiss. IV, Append. III, 42, but it is not possible to say without comparing the types.

65. *O. disciferum* Leighton sp. nov.

Plantae alt. 10—16 cm. *Bulbus* globosus vel ovoideus, tunicis coriaceis in collo productis. *Folia* 1—3, linearia, canaliculata. *Inflorescentia* foliis breviora; bracteae acuminatae e basi lata; pedicelli patentes, bracteis longiores. *Perianthii* segmenta albida, viridi- vel



64. *O. karasbergense*. 65. *O. disciferum*. (All figures $\times 2$.)

brunneo-vittata, ovata, obtusa. *Stamina* vix segmentis aequantia, filamenta subaequalia, basibus expansis apiculatis. *Ovarium* globosum, disco basale 6-lobato, infra in stipe angustatum.

Hab. South-West Africa. Otavi, Dinter 5273 (*Type*); Karibib, Dinter 6787.

Plants 10—16 cm. high. *Bulb* globose or ovoid, 14—20 mm. diam. with tough, leathery outer tunics, produced into a neck 2—4 cm. long. *Leaves* 1—3, linear, canaliculate, 5—15 cm. long, 1—2 mm. broad. *Inflorescence* 10—14 cm. high; bracts acuminate from a broad base, shorter than the pedicels; pedicels patent, 10—15 mm. long. *Perianth-segments* whitish with a green or brown median stripe, ovate, obtuse, 4—6 mm. long, 1—2 mm. broad. *Stamens* nearly as long as the perianth, filaments expanded near the base, apices of expansions sharply pointed. *Ovary* globose with a flattened base surrounded by a six-lobed, disc-like outgrowth below which it narrows abruptly into a short stipe.

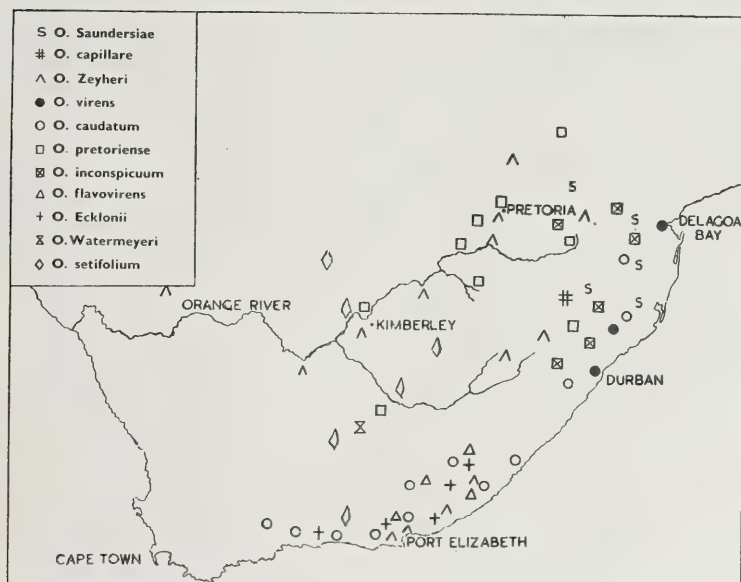
Fl. Dec.—Jan.

[Fig. 65. Map X.]

These plants might be *O. otaviense* Krause or *O. conicophilum* Krause but neither of these descriptions mentions the characteristic expansion of the filaments nor the disc-like structure at the base of the ovary.

66. *O. virens* Lindl. Bot. Reg. t. 814. Kunth Enum. IV, 358; Bak. Journ. Linn. Soc. XIII, 276.

Plants 45—60 cm. high. *Bulb* globose 25—30 mm. diam. *Leaves* 4—6, glabrous, as long as the inflorescence, 1—3 cm. broad at the base,



MAP IX.

channelled below, flattened above, and finally semiterete near the apex. *Inflorescence* many-flowered, buds densely packed, peduncle elongating at the flowering time to give a lax appearance; bracts attenuate, exceeding the flowers; pedicels 3—5 mm. long. *Perianth-segments* pale green or white with a dark green median stripe, ovate, obtuse. *Stamens* almost as long as the perianth, 3 outer filaments lanceolate, 3 inner filaments broadly expanded, expansions lobed or toothed at the apex. *Ovary* ovoid, style and stigma as long as the ovary. *Capsule* broad at the base, subacute at the apex, seeds flattened.

Hab. Portuguese East Africa: Gazaland, *Earthy* in Bolus Herb.

23002; Inhaka Island, Delagoa Bay, *Steytler*, Nat. Bot. Gdns. 1773/35. Natal: Berea, Durban, *Medley Wood* 4080, 3755, Herb. Norm. 1012, *Forbes* 474; Durban North, *Wylie* in Herb. Natal 23110, *Forbes* 571. Zululand: Entembeni, Hluhluwe, *Wheelwright* in Nat. Herb. Pretoria 12388.

Fl. Sept.—Mar.

[Fig. 66. Map IX.]

67. *O. caudatum* Jacq. Collect. II, 315; Ic. II 19, t. 423; Ait. Hort. Kew I, 442; edit. 2. II, 261; Willd. Sp. Pl. II, 125; Curt. Bot. Mag. t. 805; Kunth Enum. IV, 357; Bak. Saund. Ref. Bot. t. 262; Journ. Linn. Soc. XIII, 276. *O. scilloides* Jacq. Hort. Schönbr. I, 46, t. 88; Willd. Sp. Pl. II, 119; Kunth Enum. IV, 358; Bak. Journ. Linn. Soc. XIII, 276. *O. longibracteatum* Jacq. Red. Lil. t. 120.

Plants 60—90 cm. high. *Bulb* ovoid or globose, 3—6 cm. diam. with papery tunics, tending to form bulbils near the base. *Leaves* 4—6, glabrous, soft, lorate 50—100 cm. long, 2—5 cm. broad, acuminate, usually caudate near the apex. *Inflorescence* many-flowered, usually dense; bracts exceeding the flowers, lanceolate, membranous with green veins when young; pedicels 5—15 mm. long. *Perianth-segments* white or greenish with a deep green median stripe, long-ovate, 7—9 mm. long, 3—4 mm. broad. *Stamens* three-quarters as long as the perianth, filaments broadly expanded in the lower half, tapering to the apex, three inner broader than the three outer. *Ovary* ovoid or somewhat globose. *Capsule* broad at the base, subacute at the apex before dehiscence.

Hab. Cape Province. Oudtshoorn Div.: Mts. near Oudtshoorn, *Pocock* in Bolus Herb. 22964. George Div.: Kaaimans River Pass, *Fourcade* 5692. Knysna Div.: *Baxter*, Nat. Bot. Gdns. 3260/14; Keurbooms River Mouth, *Fourcade* 1073; Witte Drift, *Fourcade* 1497; Knysna Heads, *Schonland* 3396. Humansdorp Div.: Kloof E. of Kareedouw, *Fourcade* 4415; Humansdorp, *Du Toit*, Veterinary Survey 17639, *Thode* A 1057. Uitenhage Div.: Redhouse, *Rogers* 137; Zwartkops, *L. Bolus* in Bolus Herb. 22965. Port Elizabeth Div.: New Brighton, *Marloth* 13108; Humewood, *Paterson* 392. Albany Div.: Grahamstown, *Gane* 78 (Alb. Mus.); Alicedale, *Cruden* 1 (Alb. Mus.). Bathurst Div.: Near Kowie, *L. L. Britten* 734. Somerset East Div.: Klein Visch Rivier, *MacOwan* 1839. Stutterheim Div.: *Rogers* 12784. Queenstown Div.: Queenstown, *Galpin* 1590. Komgha Div.: Amabele, *De Vries* s.n. (Nat. Herb. Pretoria); nr. Komgha, *Flanagan* 1709, 1111. Kentani Div.: Pegler 1464, 2018, 1380, 1396. Natal: Nongwaan Falls, Amanzimtoti Glen, 21789 in Herb. Natal. Zululand: Hluhluwe,

Henry Nat. Bot. Gdns. 1768/34. Swaziland: Havelock Concession, Galpin 1054.

Fl. July—Dec. (intermittently throughout the year).

[Fig. 67. Map. IX.]

68. *O. breviscapum* Leighton sp. nov.

Plantae alt. 17 cm. *Bulbus* elongatus, long 5 cm., diam. 2 cm. tunicis coriaceis. *Folia* 3, linearia, canaliculata. *Inflorescentia* pauciflora; pedicelli patentes. *Perianthii* segmenta patentia, alba, viridi-vittata, oblonga, obtusa, apice subcucullata, minute barbata. *Stamina* erecta, subaequalia, filamentis basi spathulatis. *Ovarium* truncatum, stipitatum; stigma papillosa.

Hab. South-West Africa: Warmbad Dist. Wide open spaces between Modder Drift and Sjamboek River, Pillans 6461.

Plants about 17 cm. high. *Bulb* elongate, outer tunics leathery. *Leaves* 3, linear, canaliculate on the upper face, somewhat fleshy, up to 30 cm. long, 3 mm. broad. *Inflorescence* 12 cm. high, few-flowered. *Perianth-segments* white, with a broad green median stripe, 12 mm. long, 3—3.5 mm. broad, apices obtuse, subcucullate and minutely barbate. *Stamens* erect, subequal, filaments subulate with a spathulate expansion at the base. *Ovary* truncate, squarely angled, slightly stipitate. *Stigma* papillose.

Fl. Mar.

[Fig. 68. Map X.]

69. *O. pretoriense* Bak. in Bull. Herb. Boiss., 2nd Ser. I, 855.

Plants 30—60 cm. high. *Bulb* globose or depresso-globose, 2—4 cm. diam., with grey or brownish leathery tunics, often produced into a short neck. *Leaves* 3—6, erect, encircling the peduncle at the base, firm, canaliculate, glabrous, sometimes as long as the inflorescence, usually shorter, 1—2 cm. broad at the base, tapering gradually to the apex. *Inflorescence* usually narrow, dense, many-flowered; bracts membranous often with a median green nerve, acuminate from a broad base, longer than the pedicels; pedicels 3—5 mm. long. *Perianth-segments* whitish with a median green stripe, long-ovate, 6—7 mm. long, 2.5—3 mm. broad. *Stamens* nearly as long as the perianth, filaments lanceolate, subequal. *Ovary* globose or ovoid, deeply lobed, style and stigma as long as the ovary. *Capsule* broad, apex obtuse or subacute. *Seeds* large, angled.

Hab. Transvaal. Pretoria Div.: Pretoria, Waterkloof Ravine, Mogg 15563, Diocesan School for Girls, Driver in Nat. Herb. Pretoria 22817, Fountains Valley, Verdoorn in Nat. Herb. Pretoria 22822, Repton

800 ; Meintjies Kop, *C. A. Smith* 3298, *Dyer* 2517, *Mogg* 15295 ; Premier Mine, *Newnham* in Nat. Herb. Pretoria 22820. Johannesburg Div. : Milner Park, *Moss* 6197 ; Benoni, *Verdoorn* 817, *Bradfield* 250. Potchefstroom Div. : Welverdiend, *Louw* 46. Rustenburg Div. : Rustenberg, *Nation* 380. Lichtenburg Div. : Grasfontein, *Sutton* 292. Pietersburg Div. : Blinkwater, *Bremekamp* and *Schweickerdt* 177. Ermelo Div. : Farm Nooitgedacht, *Henrici* 1499. Heidelberg Div. : Grootvlei, *Gillfillan* in Herb. Galpin 7112. Natal : Muden, *Wylie* in Nat. Herb. Pretoria 22821. Orange Free State : Kroonstad, *Pont* 265. Senekal Div. : Doornkop, *Goossens* 816. Cape Province. Kimberley Div. : Kimberley, *Esterhuysen* 1195. Colesberg Div. : Naauwpoort, *Rogers* 17312.

Fl. Oct.—Dec.

[Fig. 69. Map IX.]

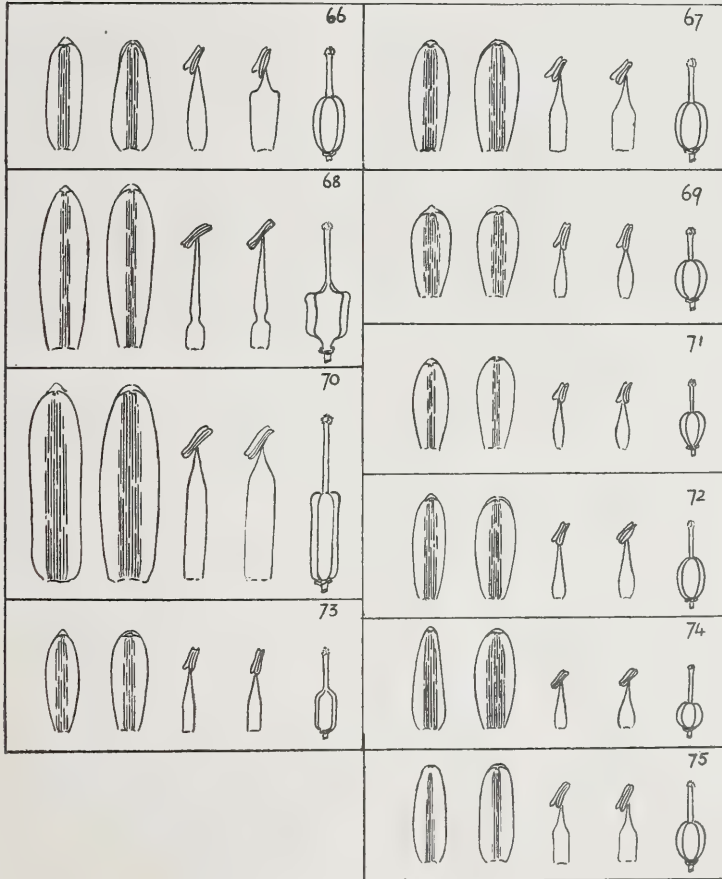
70. **O. Wilmaniae** Leighton sp. nov.

Plantae alt. 30—60 cm. *Bulbus* globosus, tunicis coriaceis. *Folia* 4—6, linearia, canaliculata, glauca, crassiuscula, basi pedunculum amplectente. *Inflorescentia* multiflora, saepe pyramidalis ; bracteae scariosae, attenuatae, nervo mediano conspicuo, pedicellis breviores ; pedicelli patentes. *Perianthii segmenta* alba, viridi-vittata, patentia vel reflexa, obtusa subcucullata. *Stamina* erecta, filamentis lanceolatis, perianthio paullo breviores. *Ovarium* oblongum, distincte lobatum, lobis apice rotundatis ; stylus gracilis cum stigmatibus papilloso, ovario aequilongus. *Capsula* lata. *Semina* subdiscoidea, atra, plana.

Hab. South-West Africa : Sandfontein, *Wilman* in McGregor Museum 1599, in Bolus Herb. 15280 (*Type*) ; Omaruru, *Herre* in Stell. Univ. Gdns. 78. Bechuanaland : Mahalapye, *Mansergh* in Bolus Herb. 23025. Transvaal. Rustenburg Div. : Brits, *Henry* in Nat. Bot. Gdns. 2864/34. Cape Province. Prieska Div. : Near Prieska, *Bryant* in McGregor Mus. 4250. Hopetown Div. : Near Hopetown, *Muskett* in Bolus Herb. 5974. Locality uncertain, *Pillans* in Bolus Herb. 23026.

Plants 30—60 cm. high. *Bulb* globose, 4—5 cm. diam. tunics coriaceous. *Leaves* 4—6, linear, glaucous, canaliculate, slightly fleshy, clasping the peduncle at the base, 20—40 cm. or more in length, 15—30 mm. broad, margins hyaline. *Inflorescence* many-flowered, usually pyramidal ; bracts scarious with one conspicuous median nerve, long-attenuate from a broad base, shorter than the pedicels ; pedicels spreading 2—5 cm. long. *Perianth-segments* white with a broad median green stripe, spreading widely or even reflexing a little when fully open, 12—20 mm. long, 3—4 mm. broad, obtuse, subcucullate. *Stamens* erect, a little shorter than the perianth, filaments lanceolate, 3 inner

broader than the 3 outer. Ovary oblong, distinctly 3-lobed, the apices of the lobes somewhat rounded, style slender, with the papillose stigma as long as the ovary. Capsule broader than long; seeds subdiscoid black, shiny, flat.



66. *O. virens*. 67. *O. caudatum*. 68. *O. breviscapum*. 69. *O. pretoriense*.
70. *O. Wilmaniae*. 71. *O. inconspicuum*. 72. *O. flavovirens*. 73. *O. Ecklonii*.
74. *O. Watermeyeri*. 75. *O. setifolium*. (All figures $\times 2$.)

Fl. Nov.—Feb.

[Fig. 70. Map X.]

Comparison with the type of *O. pulchrum* Schinz, Verh. Bot. Ver.

Prov. Brandenb. XXXI, 221 (1889) may show this to be the same species. Since that species was described on the inflorescence and flowers only, I hesitate to associate the plants I have seen with Schinz's description.

71. *O. inconspieuum* Bak. Fl. Cap. VI, 498. *O. Saltmarshei* Bak. Fl. Cap. VI, 513.

Plants 30—60 cm. high. *Bulb* ovoid or globose, 1—3 cm. diam., bulb axis sometimes produced below the bulb. *Leaves* 2—3, linear, erect, glabrous, clasping the peduncle near the base, 20—30 cm. long, 3—8 mm. broad, rarely 10—15 mm. broad at the base, apex obtuse or subacute. *Inflorescence* few—many-flowered, usually corymbose sometimes elongate; bracts membranous, acuminate from a broad base, longer than the pedicels; pedicels 5—7 mm. long. *Perianth-segments* white with a distinct green or brownish median stripe, 6—7 mm. long, 2—3 mm. broad. *Stamens* subequal, filaments lanceolate, more than half as long as the perianth. *Ovary* obconic, rarely globose, as long as the style and stigma.

Hab. Transvaal. Swampy ground, Umlomati Valley, Barberton, Galpin 1361 (*Type*); Carolina, Moss & Rogers 1128, Rogers 22983. Middelburg Div.: Keeromspruit, F. Z. v. d. Merwe s.n. (Nat. Herb. Pretoria). Belfast Div.: Machadodorp, Galpin 12509, 13012; near Belfast, Bolus 12411. Swaziland. Havelock Concession, Komassan Range, Saltmarshe in Herb. Galpin 1057. Natal. Lidgetton, Wood 7381; Ensekeni, Wood 12064; Balgowan, Bond 1295; Maritzburg, Allerton Laboratory, Vet. Research 65; Giant's Castle, A. Bolus in Bolus Herb. 23003; Polela, Dyer 3245.

Fl. Sept.—Dec.

[Fig. 71. Map IX.]

72. *O. flavovirens* Bak. in Journ. Bot., 1874, 366.

Plants 30—60 cm. high. *Bulb* globose, 15—30 mm. diam., tunics papery. *Leaves* 3—8, erect or sub-erect, about as long as the inflorescence, 10—20 mm. broad at the base, canaliculate above, semiterete at the apex. *Inflorescence* many-flowered; bracts acuminate from a broad base, exceeding the flowers; pedicels 6—8 mm. long. *Perianth-segments* white with a green median stripe, 7—9 mm. long, 2—3 mm. broad. *Stamens* more than half as long as the perianth, lanceolate, three inner filaments broader than three outer. *Ovary* ovoid. *Capsule* broad, truncate at the apex.

Hab. Cape Province. Uitenhage Div.: Redhouse, Paterson 389. Albany Div.: Grahamstown, L. L. Britten in Bolus Herb. 23067. Somer-

set East Div. : Near Somerset East, *MacOwan* 1852 (*Type*). Queenstown Div. : Hopewell, *Katberg*, *Galpin* 8390 ; Madeira Hill, *Galpin* 2337. Cathcart Div. : Fairford, *Cotterell* 155. East London Div. : Cambridge, *Wormald* 99 ; Overton, *Hilner* 382.

Fl. Nov.—Feb.

[Fig. 72. Map IX.]

This species is very closely related to *O. Ecklonii* and *O. caudatum*. From the former it differs chiefly in the character of the bracts and the shape of the filaments, from the latter in having canaliculate leaves and lanceolate filaments.

73. *O. Ecklonii* Schlecht. Linnaea XXV, 177.

Plants 30—50 cm. high. *Bulb* globose or depresso-globose, 15—30 mm. diam., tunics brown, coriaceous. *Leaves* 5—7, flaccid, about as long as the inflorescence, 5—10 mm. wide at the base, canaliculate, tapering to a subulate tip, leaf margins often with a narrow hyaline margin near the base. *Inflorescence* many-flowered, usually dense, sometimes lax ; bracts longer than the pedicels attenuate from a broad base ; pedicels 5—8 mm. long, up to 10 mm. in fruit. *Perianth-segments* whitish with green median stripe, 7—8 mm. long, 2—3 mm. broad. *Stamens* two-thirds as long as the perianth, filaments broad at the base, gradually contracted from the middle to the apex, subequal. *Ovary* oblong, deeply lobed, style and stigma about as long as the ovary. *Capsule* longer than broad. *Seeds* angulate, flattened.

Hab. Cape Province. Knysna Div. : Bitou River, *Fourcade* 627a ; Forest Hall, *Duthie* 1106. Humansdorp Div. : Hankey Rd., *Fourcade* 4903 ; Slang River, *Spearman* 3 in Nat. Herb. Pretoria ; Humansdorp, *Fourcade* 5989. Port Elizabeth Div. : Vaal Vlei Estate, *Mogg* 4766. Alexandria Div. : Grassy hillsides, Alexandria, *Galpin* 10675. Albany Div. : Brakkloof, near Grahamstown, *White* 140. King Wms. Town Div. : Amatola Mts., Keiskamma Hoek, *Dyer* 311 ; Hogsback Mt., *Rattray* in Bolus Herb. 15796, *Barker* 1915. Stutterheim Div. : *Rogers* 12787. Queenstown Div. : Andriesberg, *Galpin* 2272.

Fl. Dec.—May.

[Fig. 73. Map IX.]

74. *O. Watermeyer* L. Bolus in S.A. Gard. XXI, 13.

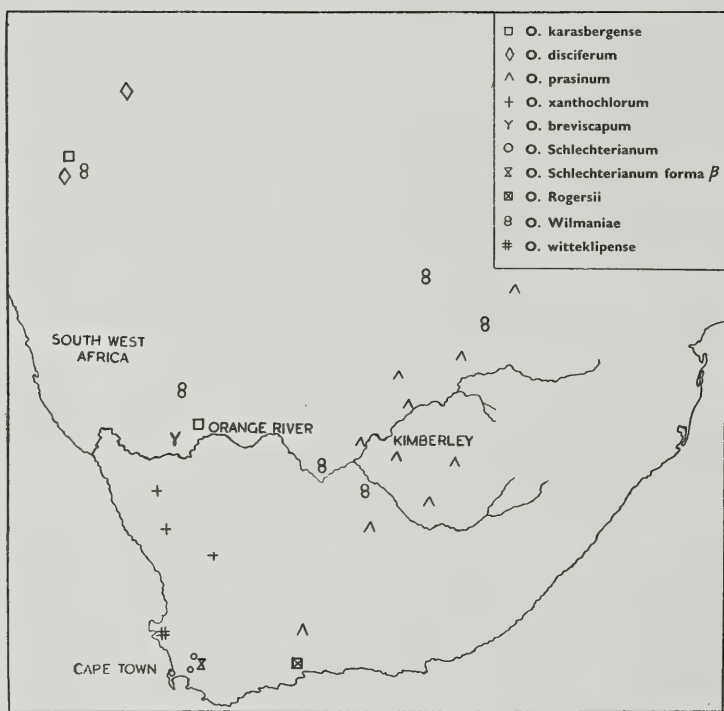
Plants about 8 cm. high. *Bulb* globose 1 cm. diam. *Leaf* solitary, filiform, spirally twisted, up to 7 cm. long. *Inflorescence* lax, 4—5-flowered ; bracts setaceous, acuminate from a broad base, shorter than the pedicels. *Perianth-segments* white with broad median green stripe, 8—9 mm. long. *Stamens* a little more than half as long as the perianth,

three outer filaments lanceolate, three inner ovate-lanceolate. *Ovary* globose, deeply lobed, apex truncate; style and stigma together longer than the ovary.

Hab. Cape Province. Richmond Div.: Sneeuwbergen, *Watermeyer* in Bolus Herb. 19340 (*Type*).

Fl. Nov.

[Fig. 74. Map IX.]



MAP X.

75. *O. setifolium* Kunth Enum. IV, 351.

Plants 20—30 cm. high. *Bulb* ovoid or globose, 3—4 cm. diam. tunics coriaceous, produced into a neck 3—6 cm. long with conspicuous membranous old leaf bases, often transversely banded with brown. *Leaves* many, often as long as, or longer than, the inflorescence when fully

developed, 2—5 mm. broad, channelled down the face. *Inflorescence* laxly many-flowered; bracts broad at the base with a long attenuate cusp, longer than the pedicels; pedicels ascending, 4—10 mm. long. *Perianth-segments* white with a greenish or brown median stripe, 6—8 mm. long, 2—2.5 mm. broad. *Stamens* more than half as long as the perianth, filaments subequal, broadly expanded in the lower half. *Ovary* ovoid, style and stigma together as long as the ovary. *Capsule* broad, seeds semi-discoid.

Hab. Cape Province. Kimberley Div.: Nooitgedacht, *Acocks* 2531; Honeynest Kloof, *Wilman* in Bolus Herb. 16408; Wildebeest Kuil, *Acocks & Lindeberg* 1014; Windsorton, *Elliot* in McGregor Mus. 2339; Herbert Div.: Mazelsfontein, *Anderson* 737. Kuruman Div.: Cotton End, *Esterhuysen* 2878; Batharos, *Silke* in Bolus Herb. 16843. De Aar, McGregor Mus. in Bolus. Herb. 13972. Victoria West Div.: Biesjespoort, *Broom* in Herb. Marloth 6337; Victoria West, *Burtt-Davy* 17587. Uniondale Div.: Koup, *Esterhuysen* 4503. Orange Free State, Fauresmith, *Verdoorn* in Herb. Henrici 2334. Bloemfontein, *Potts* 849.

Fl. Oct.—Feb.

[Fig. 75. Map IX.]

76. *O. prasinum* Lindl. Bot. Reg. 158 (1816); Kunth Enum. IV, 360; Bak. Journ. Linn. Soc. XIII, 280; Bak. Fl. Cap. VI, 508.

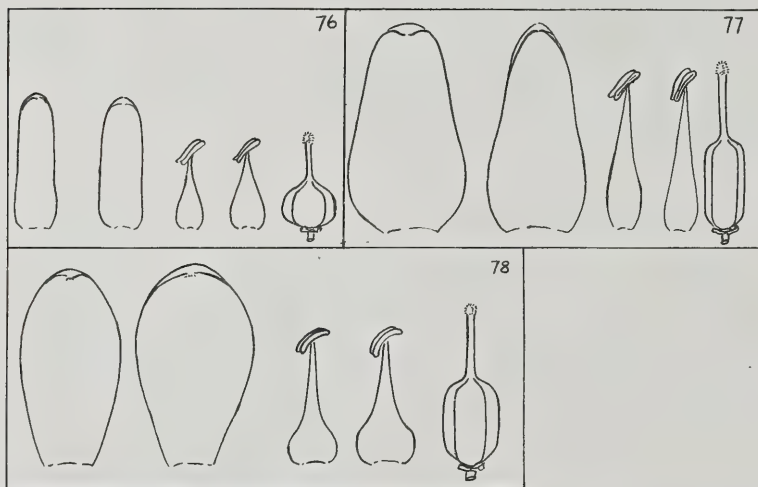
Plants 15—30 cm. high. *Bulb* ovoid or globose, 3—5 cm. diam., tunics leathery. *Leaves* 4—10, erect or suberect, linear, channelled down the face, up to 30 cm. long, 1—2 cm. broad. *Inflorescence* many-flowered, about as high as the leaves; bracts acuminate, membranous, shorter than the pedicels; pedicels ascending or patent, 2—4 cm. long. *Perianth-segments* green, subequal, obtuse 6—10 mm. long, 2—3 mm. broad, slightly cucullate at the apex, spreading widely, almost reflexed when fully open. *Stamens* more than half as long as the perianth, filaments white, ovately expanded at the base, three inner broader than the outer. *Ovary* globose or depresso-globose, deeply lobed, style slender, longer than the ovary, stigma papillose. *Capsule* usually broader than long, deeply lobed; seeds almost circular, semi-circular or elliptical, black, shiny, flattened 6—10 mm. diam.

Hab. Cape Province. Prince Albert Div.: Prince Albert, *Marchand* in Herb. Marloth 11569. Britstown Div.: De Aar, sent by McGregor Mus. in Bolus Herb. 13973. Herbert Div.: Modder River, *Wilman* in McGregor Mus. 2476, *Wilman* in Bolus Herb. 18350. Hay Div.: W. of Padkloof, *Acocks* 2208 (in McGregor Mus. 4718). Orange Free State. Boshof Div.: Leeuwkop, *Acocks* in McGregor Mus. 5499. Bloemfontein Div.: College Grounds, *Potts* 991; Poundisford, *Potts* 1321.

Fauresmith Div.: Veld Reserve, *Henrici* 3574. Transvaal. Bloemhof Div.: Bloemhof, *Tardrew* in McGregor Mus. 1132; Kameelpan, *Christiana*, *Theron* 631 in Nat. Herb. Pretoria. Lichtenburg Div.: Grasfontein, *Sutton* 259. Wolmaransstad Div.: Liebenweide, *Liebenberg* in Nat. Herb. Pretoria 22825; Boskuil, *Sutton* 259a. Johannesburg Div.: Meyerton, *Momberg* in Nat. Herb. Pretoria 1572b. Pretoria Div.: Rhenosterdrift, *Heap* in Nat. Herb. Pretoria s.n. Waterberg Div.: Nylstroom, *Rogers* 21555; Mosdene, Naboomspruit, *Galpin* M. 367. Bechuanaland. Vryburg Div.: Klipvlakte, *Burt-Davy* in Nat. Herb. Pretoria 11203.

Fl. Nov.—March.

[Fig. 76. Map X.]



76. *O. prasinum*. 77. *O. xanthochlorum*. 78. *O. Saundersiae*. (All figures $\times 2$.)

77. *O. xanthochlorum* Bak. Fl. Cap. VI, 508.

Plants 30—60 cm. high. *Bulb* globose, 4—6 cm. diam., tunics papery. *Leaves* 10—12, somewhat fleshy, lorate, glabrous, 15—30 cm. long, 20—35 mm. broad, margin hyaline. *Inflorescence* many-flowered, dense, peduncle stout, up to 15 mm. diam.; bracts lanceolate, green, exceeding the pedicels; pedicels 2—3 cm. long, ascending, often slightly arcuate. *Perianth* green, fleshy, segments long-ovate, 12—17 mm. long, 6—9 mm. broad, apex slightly cucullate. *Stamens* nearly as long as the segments, filaments subequal, thick, gradually expanded towards

the base, anthers relatively small. *Ovary* oblong, style longer than the ovary, stigma conspicuously papillose.

Hab. Cape Province. Little Namaqualand. Steyher's Kraal in mont. Kaus, *Bolus* 6598 (*Type*); Stinkfontein, *Pearson* in Sladen Mem. Exped. 6727; *Mathews* in Nat. Bot. Gdns. 2155/29; between Bitterfontein and Garies, *Leighton* in *Bolus* Herb. 23021; Wallekraal, *Compton* 5992. Calvinia Div.: Gansfontein, *Compton* 5991; Elands Vlei, *Marloth*, 10465.

Fl. Aug.—Sept.

[Fig. 77. Map X.]

78. *O. Saundersiae* Bak. in Gard. Chron. X, 452 (1891).

Plants 60—100 cm. high. *Bulb* ovoid or globose, 3—5 cm. diam., outer tunics coriaceous. *Leaves* 5—7, lorate, firm, becoming flaccid with age, 30—50 cm. long, 3—7 cm. broad, apex acute, margins hyaline. *Inflorescence* many-flowered, corymbose, lengthening considerably as the flowers open; bracts lanceolate, greenish, as long as the pedicel at flowering time; pedicels with open flowers about 3 cm., in fruit 5—6 cm. long. *Perianth-segments* creamy-white, tinged with green on the under surface, three outer ovate, obtuse, 14—16 mm. long, 6—7 mm. broad, three inner orbiculate, obtuse 13—15 mm. long, 9—10 mm. broad. *Stamens* about half as long as the perianth, filaments sub-equal, narrowed to the apex from a slightly convex base, 2·5—3 mm. broad. *Ovary* green, ovoid, longer than the style; style stout, stigma papillose. *Capsule* large, broad at the base, acute and often somewhat beaked at the apex. *Seeds* black, shiny.

Hab. Transvaal. Barberton Div.: Barberton, rocky hillsides, *Galpin* 1205, *Liebenberg* 2325, 2333, *Thorncroft* 4477, *Marloth* 5385. Nelspruit, Godwan River, *Seath* in Nat. Herb. Pretoria 15225, *Knox Davies* in Nat. Bot. Gdns. 2415/29, Waterfall, *F. Z. van der Merwe* 2350. Lydenburg Div.: Sterkspruit, *Galpin* 13594. E. Transvaal, *Archbell* in Nat. Bot. Gdns. s.n. Swaziland. Mbabane, *Nicholson* in Nat. Herb. Pretoria 22829. Natal. Utrecht, *Hahn* in Natal Herb. 17964. Zululand. Eshowe, *Gerstner* in Natal Herb. 22447; Magut, *Gerstner* 3156 (Natal Herb. 29781).

Fl. Dec.—Mar.

[Fig. 78. Map IX.]

APPENDIX.

79. *O. witteklipense* Leighton sp. nov.

Plantae alt. ad 10 cm. *Bulbus* depresso-globosus, albus, 10—12 mm. diam. *Folia* 2—3, teretia, basi canaliculata, synantha. *Inflorescentia*

1—5-fl. ; bracteae latae pedicellis aequantes vel superantes. *Perianthii segmenta* laete rosea, in alabastro laete viridi-striata, obtusa. *Stamina* erecta, tria interiora quam exterioribus multo latiora. *Ovarium* longo-ovoideum, stylo nullo, stigmate conspicuo.

Hab. Cape Province. Malmesbury Div. : Witteklip, near Vredenburg, *Leighton* 655 (*Type* in Bolus Herb. and Herb. Nat. Bot. Gdns.).

Plants up to 10 cm. high growing in dense clusters. *Bulb* white, depresso-globose, 10—12 mm. diam. *Leaves* 2—3, terete above, canaliculate near the base, synanthous, 4—7 mm. long, 1—2 mm. broad, erect or sub-erect. *Inflorescence* 1—5-fl. ; bracts broad, lowest as long as the pedicel, upper slightly longer, remaining green or turning reddish at flowering time. *Perianth-segments* pale pink with greenish tinge on outer surface, obtuse 5—7 mm. long, 4—5 mm. broad. *Stamens* erect, 3—5 mm. long, three inner filaments almost twice as broad as the outer. *Ovary* long-ovoid, green, style absent, stigma conspicuous.

Fl. Oct.

[Fig. 79. Map X.]

The flowers open only in fine weather but if the weather is unfavourable they appear to be cleistogamous.

This species was found at Witteklip, a locality visited by Thunberg and described in some detail in his Travels. He mentions a white flowered form of *O. rupestre* in his Flora Capensis which is possibly the above species but *O. witteklipense* differs markedly from *O. rupestre* L. f. as defined in Part I of this paper (Journ. S.A. Bot. X, p. 108). *O. witteklipense* has shorter, broader perianth-segments and the stamens are longer in proportion to the segments than in *O. rupestre*.

80. *O. synanthifolium* Leighton sp. nov.

Plantae alt. 30—70 cm. *Bulbus* ovoideus, vel elongatus, tunicis coriaceis. *Folia* multa, lorata, synantha, marginibus integris. *Inflorescentia* multiflora, corymbosa ; bracteae membranaceae, pedicellis breviores. *Perianthii segmenta* alba, longe-ovata, obtusa vel subacuta. *Filamenta* tria exteriora, lineari-lanceolata, tria interiora dimidio infero abrupte expanso. *Ovarium* ovoideum, stylo gracile.

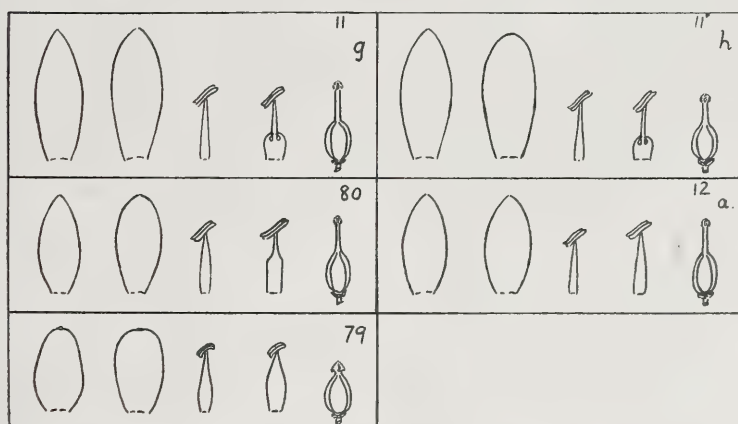
Hab. Cape Province. King Wms. Town Div. : Perie Mts., *Galpin* 3271 (*Type* in Nat. Herb. Pretoria). Queenstown Div. : Madeira Hill, *Galpin* 2528. Transkei. St. Marks, Indlunkulu Forest Reserve, *Forest Dept.* s.n. (Nat. Herb. Pretoria).

Plants from 30—70 cm. high. *Bulb* ovoid or elongate, 2—4 cm. diam., with coriaceous tunics. *Leaves* many, lorate, synanthous, 15—35 cm. long, 20—25 mm. broad, apex obtuse or subacute, margins entire. *Inflorescence* many-flowered, corymbose bracts membranous, shorter

than the pedicels; pedicels 2—5 cm. long. *Perianth-segments* white, long-ovate, 10—15 mm. long, 6—7 mm. broad, three outer sub-acute, three inner obtuse. *Stamens* more than half as long as the perianth, three outer filaments linear-lanceolate, three inner abruptly expanded from about the middle to the base. *Ovary* ovoid, style slender almost as long as the ovary.

Fl. May—Nov.

[Fig. 80.]



79. *O. witteklipense* $\times$ 2. 80. *O. synanthifolium*. 11g. *O. thyrsoides* forma θ . 11h. *O. thyrsoides* forma ι . (Add to figs. in Vol. X, p. 100.) 12a. *O. lacteum* forma β . (Add to figs. in Vol. X, p. 103.) (Figs. 80, 11g, h and 12a natural size.)

11. *O. thyrsoides* Jacq.

Forma θ .

Perianth pure white, ovary yellow, style longer and more slender than in the typical, ovary yellow.

Hab. Cape Peninsula. Table Mt., sheltered ledges and steep slopes, Skeleton Gorge, *Esterhuysen* 11503, *Thorns* in Bolus Herb. 23068; *Wolley Dod* 977; above *Kirstenbosch*, *Bolus* 4919; between Fountain and Grotto Ravines, *Pillans* 4905.

Fl. Dec.—Feb.

[Fig. 11g.]

These were erroneously placed in the typical form.

Forma ι .

Leaf margins densely ciliate. *Perianth* pure white; style slightly longer than in the typical, ovary yellow.

Hab. Cradock Div. : Halesowen, *James* in Nat. Bot. Gdns. 3277/32. Somerset East Div. : near Cookhouse, *G. G. Smith* 2870 ; Boschberg, *MacOwan* 1819 ; near Middleton, *B. Rogers* in Bolus Herb. 12941. Uitenhage Div. : Near Zuurberg, *G. G. Smith* 2869 ; Aloes, *Drege* 3132, 3148 ; Enon, *Thode* A. 1135. Albany Div. : Grahamstown, *Rogers* 27540 ; Carlisle Bridge, *Daly* 125. King Wms. Town Div. : Middle Drift, *Crampton* 102 (Nat. Herb. Pretoria) ; Keiskama Hoek ; *Scott* in Nat. Bot. Gdns. 2212/31, *Brownlee* in Bolus Herb. 22715 ; near King Wms. Town, *Flanagan* 2238. East London Div. : Nahoon Causeway, *Wood* in Herb. Galpin 8231. Queenstown Div. : Junction Farm, *Galpin* 8249.

Fl. Oct.—Nov.

[Fig. 11h.]

This form in general appearance is more like *O. lacteum* Jacq. but the expansions on the inner whorl of stamens and the character of the style preclude it from that species.

12. *O. lacteum* Jacq.

Forma β .

Leaves linear or lorate, usually synanthous, margins entire ; inner filaments broader and longer than in the typical form.

Hab. Albany Div. : Howieson's Poort, *L. L. Britten* 5430 ; near Grahamstown, *MacOwan* in Bolus Herb. 2186. Queenstown Div. : Andriesberg, *Galpin* 2231. Komgha Div. : near Komgha, *Flanagan* 788. East London Div. : Near East London, *Wood* in Herb. Galpin 8428. Kentani Div. : *Pegler* 219. Bazeia, *Baur* 508 (S.A. Mus. 23360).

Fl. Sept.—Dec.

[Fig. 12a.]

ACKNOWLEDGMENT.

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COMPLETE KEY TO THE SOUTH AFRICAN SPECIES OF
ORNITHOGALUM.

Perianth segments free or almost so.

Perianth without a median green or brownish stripe or colouration on the undersurface in the mature flowers.

Style distinct, perianth white, yellow or orange, rarely khaki. Leaves glabrous except for ciliation on the margins.

Filaments of both outer and inner whorls widely expanded.

Style under 2 mm. long. Perianth usually orange or yellow, rarely khaki or white.

Filaments of outer and inner whorls sub-equal or with similar expansions.

Flowers usually 3 cm. or more in diam., seeds with papillose testa 1 *miniatum*

Flowers usually under 3 cm. in diam., seeds with granulated testa 2 *Fergusoniae*

Filaments of outer whorl only slightly expanded, never with winglike outgrowths 3 *flavissimum*

Style 2 mm. or more in length. Perianth usually white, rarely yellow. 4 *Brownleei*

Flowers usually yellow rarely white 4 *Brownleei*
Flowers white or cream.
Filaments narrowly petaloid, without angular expansions 5 *subcoriaceum*

Filaments with angled or lobed expansions.
Outer filaments with erect, apical processes on basal expansions 6 *ceresianum*

Outer filaments with lateral or infolding processes on basal expansions.
Perianth segments long, acute 7 *Hermannii*

Perianth segments broad, obtuse or sub-acute.
Filaments white or cream 8 *alticolum*

Filaments with the same colouring as the bases of the perianth segments, i.e. greyish or brownish yellow.

Outer filaments only slightly expanded in the lower half 9 *Leipoldtii*

Outer filaments with winglike expansions 10 *Pillansii*

Filaments of outer whorl simple.
Filaments sub-equal 12 *lacteam**

Filaments of outer and inner whorls distinct.

Bulbs with blackish outer tunics, leaves glaucous.

Leaf margins densely ciliate 15 *fimbri-marginatum*

Leaf margins minutely ciliate or entire 14 *pruinosum*

Bulbs with grey or white tunics, leaves not glaucous.

Style stout, inner filaments with incurved winglike expansions 11 *thyrsoideus**

Style slender, inner filaments more or less squarely expanded at the base.
Expanded portion of filament less than half the length of the filament 13 *conicum*

Expanded portion of filament more than half the length of the filament 80 *synanthifolium*

Style almost absent, perianth yellow, orange, rarely pinkish. Leaves glaucous, rarely shiny, terete or sub-terete, rarely flat, margins entire.

* See Appendix also.

- | | |
|---|------------------|
| Leaves linear, terete or sub-terete. | |
| Filaments twice as long as broad. | |
| Inflorescence densely many-flowered | 16 multifolium |
| Inflorescence lax, few-flowered | 17 ranunculoides |
| Filaments more than twice as long as broad. | |
| Filaments half or less than half as long as the perianth | 18 rupestre |
| Filaments more than half as long as the perianth, leaves shiny | 79 witteklipense |
| Leaves lanceolate or ovate, flat | 19 maculatum |
| Perianth white or cinnamon with a median greenish or brown stripe or colouration on the undersurface of mature flowers. | |
| Filaments widely expanded from apex to base, outer filaments much shorter than inner filaments. | |
| Leaves vaginate, distant | 33 inclusum |
| Leaves ovate, adpressed to the ground | 34 constrictum |
| Filaments if widely expanded then only in the basal half. | |
| Outer filaments linear or lanceolate, inner widely expanded in the lower half. | |
| Basal expansions of inner filaments lobed or pointed. | |
| Leaves vaginate, vagina chocolate spotted .. | 35 distans |
| Leaves vaginate, vagina not spotted: | |
| Margins of leaves with long cilia, surfaces usually glabrous | 36 Marlothii |
| Margins of leaves densely and shortly fimbriate, surfaces with simple or compound hairs .. | 37 hispidum |
| Basal expansions of inner filaments somewhat squarely expanded, not lobed or pointed. | |
| Leaves with conspicuously ciliate margins, vegetative parts green | 38 ciliatifolium |
| Leaves with margins entire or only slightly fimbriate, leaves and stems reddish | 39 rubescens |
| Outer and inner filaments sub-equal. | |
| Outer and inner filaments widely expanded in the lower half. | |
| Apex of expansions fimbriate | 40 Richardii |
| Apex of expansions horned | 41 bicornutum |
| Outer and inner filaments lanceolate or linear, not widely expanded in the lower half. | |
| Leaves vaginate, vagina conspicuously spotted .. | 42 karooicum |
| Leaves vaginate, vagina not spotted. | |
| Leaves densely covered with simple or compound short hairs or downy pubescence. | |
| Leaves downy-pubescent, purple on the under surface | 43 Salteri |
| Leaves hispid | 44 thermophilum |
| Leaves sparsely covered with long hairs or glabrous except for ciliate margins. | |
| Plants usually above 30 cm. in height. | |
| Leaves synanthous | 45 longiscapum |
| Leaves hysteranthous | 46 attenuatum |
| Plants up to 30 cm. in height. | |
| Leaf margins ciliate, crisped. | |
| Flowers cinnamon or pinkish, 15—20 mm. diam. | 47 crispifolium |
| Flowers white with green median stripe, 8—10 mm. diam. | 48 Bolusianum |
| | (Forma) |
| Leaf margins ciliate or fimbriate, not crisped. | |
| Leaves minutely ciliate or fimbriate, bulb tunics grey or brown, leathery. | |

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- Flowers 8—10 mm. diam. 48 Bolusianum
- Flowers 2 cm. diam. 49 natalense
- Leaves conspicuously ciliate, bulb tunics black, hard
 - Surfaces of leaves glabrous 50 pilosum
 - Surfaces of leaves pilose 51 pullatum
- Perianth segments joined at the base.
 - Perianth white or fuscous with a green or brown median stripe, segments usually cucullate, papillose or barbate at the apex, seeds angled. Leaves linear or filiform, rarely lanceolate.
 - Leaves tough, wiry or rigid.
 - Leaves rigid, erect, definite, usually much shorter than the inflorescence 26 tortuosum
 - Leaves filiform sinuose, rarely straight.
 - Leaves flattened, canaliculate or subterete.
 - Leaves flattened, margins conspicuously thickened, apices not recurved 53 comptum
 - Leaves canaliculate or subterete, margins incurved, apex recurved.
 - Margins with coarse setae 28 Comptonii
 - Margins entire 27 nanodes
 - Leaves wiry or tough, if erect only near the base, indefinite, flexuose.
 - Leaves filiform, wiry, 1 mm. or less in breadth above the base.
 - Bulbs produced into a neck 5—10 cm. long often with a right-angled bend 54 graminifolium
 - Bulbs produced into a straight neck 2—4 cm. long.
 - Leaves many 29 epigeum
 - Inflorescence many-flowered, dense, up to 36 cm. high.
 - Inflorescence few-flowered, lax, up to 20 cm. high 55 oliganthum
 - Leaves few 56 langebergense
 - Leaves linear, tough, often canaliculate, more than 1 mm. broad above the base.
 - Leaf bases forming a neck.
 - Leaves many, fibres bristly, erect 57 leptophyllum
 - Leaves few, fibres soft interwoven 52 subulatum
 - Leaf bases not forming a neck.
 - Plants more than 30 cm. high, leaves 7—10 mm. broad at the base 58 juncifolium
 - Plants less than 30 cm. high, leaves up to 5 mm. broad at the base 59 brevifolium
 - Leaves soft or flaccid.
 - Leaves filiform, semiterete or terete.
 - Flowers 8 mm. or less in diam., peduncle stiffly erect 60 capillare
 - Flowers 10 mm. or more in diam., peduncle not stiffly erect 61 Schlechterianum (typical)
 - Leaves lanceolate or linear.
 - Leaves shorter than the inflorescence.
 - Leaves lanceolate or linear, with conspicuously ciliate margins. Inflorescence few-flowered. 61 Schlechterianum (forma)
 - Leaves lanceolate, margins entire or minutely denticulate. Inflorescence many-flowered 62 Rogersii
 - Leaves longer than the inflorescence 63 Zeyheri
 - Perianth fleshy, white, yellow or fuscous, with a green or brownish median stripe, rarely green or white with a faint green tinge on the undersurface, segments cucullate, barbate. Seeds subdiscoid.

- Style excentric in young flowers.
 Leaves 2—5, opposite.
 Leaves flat, spreading 20 *Pearsonii*
 Leaves canalliculate, erect or sub-erect at the base,
 often encircling the peduncle.
 Filaments expanded gradually from the apex
 to the base 21 *suaveolens*
 Filaments expanded abruptly in the lower half . . 22 *Muirii*
 Leaves many, arranged in a rosette.
 Margins entire.
 Leaves terete or sub-terete, flattened or canali-
 culate at the base only 23 *polyphyllum*
 Leaves flat or broadly canalliculate, spreading . . 24 *odoratum*
 Margins coarsely ciliate or muricate 25 *secundum*
- Style erect.
 Ovary deeply lobed or sculptured.
 Leaf solitary, pedicels 1 cm. long or less 30 *solitarium*
 Leaves 2 or more, or if one then pedicels more than
 1 cm. long.
 Leaves flat, long-ovate or lorate.
 Leaf margins crenulate, coarsely ciliate when
 young 31 *crenulatum*
 Leaf margins smooth, leaves pubescent when
 young 32 *cinnamomeum*
 Leaves linear, canalliculate, ovary with a disc-
 like structure above the stipitate base.
 Filaments with spatulate expansions in the
 lower half 64 *karasbergense*
 Filaments with apical points on the basal
 expansions 65 *disciferum*
- Ovary simple.
 Perianth white with broad green median stripe.
 Filaments with broad expansions near the base.
 Expansions lobed or pointed at the apex 66 *virens*
 Expansions not lobed or pointed at the apex.
 Ovary ovoid.
 Leaves arising from a neck of mem-
 branous leaf bases; leaves up to
 5 mm. broad 75 *setifolium*
 Leaves arising directly from the bulb;
 leaves 2—5 cm. broad 67 *caudatum*
 Ovary truncate at the apex, stipitate at the
 base 68 *breviscapum*
- Filaments lanceolate.
 Leaves many.
 Bracts conspicuous in bud and after.
 Leaves firm, erect.
 Inflorescence with short pedicels, narrow 69 *pretoriense*
 Inflorescence with long pedicels, corym-
 bose or thyrsoid.
 Ovary oblong, truncate at the apex 70 *Wilmaniae*
 Ovary obovoid 71 *inconspicuum*
 Leaves flaccid 72 *flavovirens*
 Bracts not conspicuous 73 *Ecklonii*
 Leaf solitary 74 *Watermeyeri*
- Perianth green or white without a median stripe.
 Ovary globose or depresso-globose, flowers green
 Ovary oblong or squarely angled at the apex,
 flowers green or white.
 Flowers green, filaments lanceolate, in-
 florescence elongate 77 *xanthochlorum*
 Flowers white, filaments broadly expanded at
 the base, inflorescence corymbose 78 *Saundersiae*